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Sigmund Freud Memorial Address

THE PLACE OF PSYCHOANALYSIS IN MODERN MEDICINE*

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Throughout the civilized world, save only perhaps in that portion which lies behind the Iron Curtain, there will be celebrated this year the one-hundredth anniversary of the birth of Sigmund Freud. Even in those lands that lie under the shadow of the Soviet dictatorship and where the official psychiatric saint is Ivan Pavlov, it is not likely that the anniversary will go unnoticed. It will no doubt be made the occasion for the extollation of the dialectics of materialist psychology above what they will label "the bourgeois fictions" of Freudian psychoanalysis. And as they do so, all the great spirits, relishing their merited immortality in the Elysium, will rock in gentle mirth, for being great spirits they will recall that it was the sweet and gentle Ivan who ingeniously proved the basic validity of Freud's theses. Upon the sands of the Fortunate Isles they will draw circles and ovals and recount how Pavlov first induced an experimental neurosis in "man's best friend," the dog, by attempting to tax the animal's motivated discrimination beyond the limits of its innate competences. To them we must perforce leave further discourse on the foibles of men and scientists. We will do better to fathom precisely why so many among us will do honour to the memory of this great man on the centennial of his birth. For whatever one may think of his metapsychology, and however one may judge his system of psychotherapy, it cannot but be acknowledged that Freud was a great man, a great spirit—and that his thoughts, his theories, and his labours have had profound effects not only in the special field of psychiatry, but upon all of contemporary medicine, and upon our intellectual and cultural life as well.

All this is the more remarkable since Freud, to use an American expression, was a Medical Maverick, a personage that bore the brand mark of no academic herd. The motto of his life could well have been that elected by Paracelsus, to whom, at least in the spirit of independence and Promethean courage, Freud was akin—*Alterius not sit, qui suis esse potest.*

Freud in every sense of the word was "a man to himself," a unique character. He had no lineal forerunner, and no contemporary runners-up. There was no Wallace to Darwin, no Colombo to Harvey, no para-personage to Freud. He had no co-discoverers, and in the beginning of his work no co-workers. However, it is not true that he was entirely an original thinker. He was an autodidact. But he also drew knowledge and inspiration from the past, and from a very few among his contemporaries—notably from Wilhelm Fliess with whom he stood in most intimate friendship during fifteen years of his young manhood. (1) But all these stand in relation to his system of psychology as paint, brush, and canvas relate to the creation of a masterpiece. Still the uniqueness of his work and the profound and far reaching effects of his teachings cannot entirely be credited to his genius. The times, too, favored his enterprise. Had Freud lived and labored a hundred years earlier, or fifty years later, Freud would not have been *the* Freud whose historic magnitude we celebrate and marvel. Freud took time by the forelock.

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This last affirmation imputes to Freud a great deal of volitionalism, of wilful, ambitious, calculating enterprise—far more than is common to the personalities of most outstanding scientists. The imputation is intended. Among the categories of those who are born to fame, those who have it thrust upon them and those who seek it, Freud belongs to the last. Freud was inordinately ambitious "to make a name for himself," to become famous. Long before he attained any measure of prominence, he earnestly spoke of his future biographers, and of the difficulties he was placing in their prospective labors—by periodically destroying his personal mementos. Anticipating his fame, he gloated over the travails of those who would attempt to reconstruct the story of his life and labors. "Let the biographers chafe," he wrote in a letter to his betrothed, "We won't make it too easy for them. Let each one of them believe he is right in his conception of the development of the Hero. Even now I enjoy the thought of how they will all go astray." That was written in 1885, when Freud was twenty-nine years of age. There is, of course, no inherent evil in ambition, nor aught discreditable in craving fame, unless, of course, they lead to evil ends, which in the case of Freud they signally did not. However, it is not possible to appreciate, nor to truly understand Freud's unique labors unless one is fully cognizant of, and takes into account, these dominant characteristics of Freud's personality. They are reflected in his compulsive need to be original, to be an autodidact, not to learn from others, but to think through his own thoughts first, and then to learn, if at all, what others had thought before him. "I do not want to read," he wrote to his friend Fliess (1), " . . . it stirs up too many thoughts and stints me of the satisfaction of discovery." And again: "First I want to get my own ideas into shape, then I shall make a thorough study of the literature on the subject . . . So long as I have not finished my own work I cannot read." (2).

Nor can we appreciate Freud's relations to his disciples and co-workers, if we do not take into account his consuming ambitions. He welcomed co-workers —so long as they were disciples. He was gratified when his younger associates elaborated on his thesis, even when they did not always nor fully acknowledge the source of their initial inspirations. But he did not gladly suffer the presence of strong personalities, of actively critical, or ambitious co-workers. In summating the spirit of the Wednesday evening roundtable discussions which Freud inaugurated in 1903, and which were held at his home, Fritz Wittels wrote (p. 118): (3).

> "These evenings were not always interesting. Freud's purpose in the whole set-up was to drive his own thoughts through the filter of some informed, even though mediocre, brains. Strong individualities, or very critical and ambitious co-workers, therefore, were less acceptable to him. Psychoanalysis was the realm of his imagination and his will. He who accepted his sovereignty, was welcome. He wanted to look into a kaleidoscope which would multiply his own figures through reflection." (3).

I fear that my insistence on the wilful ambitiousness of Freud's personality, his single devotion to the pursuit of his native thoughts, may give you a distorted and entirely erroneous picture of the man. There was nothing petty, grubby, or mean about Freud. He was rather a consecrated man, one who would not be deflected from his elected course, and his self-appointed mission. In his purview the world is wide and its highways many. Who chose to go *his* way was welcome, and he did not block the way of those who chose other paths. That the more spirited and the keener among his co-workers broke away from him is not to his discredit, any more than that among his faithful were many Lotus Eaters. Asked why Freud's followers exhibited so little

originality, one of his favored disciples answered: "*Er hat uns alles vorweg genommen und nichts zu entdecken ubrig gelassen.*" (He anticipated us in everything and left us nothing to discover.) Wittells, who reported this incident added: "*In dieser Hypnose lebt die orthodoxe Schule dahin.*" The orthodox school labors under this hypnotic state. (4).

It is not my intention to dwell at length on the singular, complicated, and most interesting features of Freud's personality, nor to dilate on Freud's relations to his disciples and co-workers. To those interested I heartily recommend Fritz Wittels' biographic study of Freud. It is a more judicious, more penetrating assessment of Freud's personality than is Jones' adulatory biography, and it should be read in conjunction with the latter.

I said the times favored Freud; I must now turn to the elaboration of this somewhat cryptic affirmation. What were these times—what their span, what their temper and mood, and what the burden of their faith and beliefs. Freud began the study of medicine in 1873. In 1895 he published (together with Breuer) his epoch-making work on *Hysteria*, in 1900, his work on *Dream Interpretation*, in 1904 the *Psychopathology of Everyday Life*, in 1905 his *Three Contributions to the Theory of Sexuality*, in 1909 his analysis of the anxiety states of little Hans, in 1912 his work *Totem and Taboo*. These works may be taken as the incunabula of the Freudian corpus. They appeared in the span of less than twenty years, fifteen of which belongs to the twentieth century. But Freud himself belongs to the nineteenth century. It was from that century that he drew his scientific and philosophical nurture. It is to the science of that century that his unique system stands as a reactive, piercing, and illuminating challenge. Let us scanningly survey the world of science from, say, 1850 to 1900. Among its leading spirits, notably in the realms of biology and medicine were Rokitansky, Virchow, Claude Bernard, Helmholtz, Carl Ludwig, Du Bois-Reymond, Cohn, Darwin, Haeckel, Ehrlich, Koch, and Jacques Loeb. You may find this listing somewhat strange, more so because of those great names omitted, than because of those given. Let me, therefore, hasten to explain that I have chosen from among those who are distinguished for their influence on the *philosophy* of medicine rather than from those who, like Pasteur, Lister, and Von Behring achieved great practical results. Those I have named were theoreticians in science, as well as great performers in science. Even so I have not offered you an all-inclusive nor exhaustive list. It is representative rather definitive. And what this galaxy of personages represents is the analytical, positivist, materialist, school of thought which unreservedly held to the conviction that "all the processes of nature, including those commonly called 'intellectual,' the whole physical and moral order of things, are reducible to matter and motion and are completely explicable in terms of these two concepts." Those who subscribed to this conviction dedicated themselves to the refined analysis of matter and to the explication of the ways in which motion and matter affect both the normal and the abnormal processes to be witnessed in life. The positivist-materialist scientists disallowed the possibility that any of the phenomena of experience, biological, social, and cultural, could not or would not in time be explained and accounted for on the basis of the interplay of matter and motion. This belief inspired not only the biologists, but equally such representative thinkers as the philosopher, Herbert Spencer, the sociologist, August Comte, and the economist, Karl Marx, each the founder of a populous school of followers. They also precluded the operations of any but materialistic factors.

The philosophy of positivist materialism was aggressively propounded in the manifesto of the so-called School of von Helmholtz, the most outspoken proponent of which was Emil du Bois-Reymond. "No other forces," he wrote, "than the common physical-chemical ones are active within the organism. In those cases which cannot at the time be explained by these forces one has either to find the specific way or form of their action by means of the physical-mathematical method or to assume new forces equal in dignity to the chemical-physical forces inherent in matter, reducible to the forces of attraction and repulsion." This was not solely the faith of the avowed followers of the School of von Helmholtz. It was the commitment of practically the entire world of science. The dissidents were few in number, and their influence nil.

I need not, I am sure, describe how much of life-manifest was indeed accounted for, made clear and understandable in terms of the interplay of matter and motion, nor yet is there any need to dilate on how great were the practical yields of this methodology in medicine, in animal husbandry, in agriculture, and in industrial technology. The greater part of the tale of modern science treats of the "miracles and wonders" that were effected by the followers of this school of thought. More pertinent to our concern is that segment of experience wherein the chemical-physical, and the physical-mathematical theories did not avail to explicate manifest events. Historically, and here we return to Freud, the singular crucial category of experience, the critical events, wherein the physical-chemical, the matter and motion hypothesis, proved miserably inadequate were those protean disturbances that carried the label of hysteria. The issue was really simple. One was called on to account how a limb can be "paralyzed" when it isn't paralyzed; how an organically and functionally intact eye can prove blind of vision; how one can sense on the intact skin, insensible sentations, or fail to "sense" what perforce must be sensible – pin pricks and the like. How are these indubitable conditions to be explained, and how explain also their seemingly miraculous "cure." This, in a nutshell, was the issue, and on this issue the positivist, materialist, exclusivist matter-and-motion school of thought suffered overwhelming defeat. Defeated, it did not of course abandon its ground–it was, however, compelled to open its realm to the data and the theoretical formulations of Depth Psychology. The man who breached its stronghold was Sigmund Freud.

Interestingly enough, it was in the first of his significant psychiatric publications that the crucial issue was clearly set forth, and decisively settled. I have in mind the monograph on Hysteria which he published jointly with Breuer. I shall not belabor you with the rest of Freud's metapsychology – but I must solicit your close attention to the issue that divided Freud and Breuer, and which in the end, broke up a friendship of many years' duration. It is commonly asserted that Breuer, who first involved Freud in the intimate study of hysteria, broke away from Freud because he could not countenance or accept Freud's emphasis on sexuality as the primal cause of hysteria. Those who pretended to be "in the know" further hint that the decisive incident was an erotic gesture made toward Breuer by a young female whom he had jointly treated with Freud. But all this is small talk indulged in by those who would persuade us that Breuer was a prissy and prudish old maid of a man. We have it on the best of authorities, namely Freud himself, that all this is sheer nonsense. In his *An Autobiographical Study* (5) Freud affirms that he first learned from Breuer to suspect the role of sexuality in hysteria. It was Breuer who designated hysteria as referable to the "*Geheimnisse des Alkovens*," that is the mysteries of the conjugal bed, and it was Charcot who referred to the condition as

"*toujours une genitale*." Chrobak, a noted Viennese gynecologist, had a uniform prescription for hysteria. The prescription read: "*Rp. Penis normalis—dosim repetatur!*" Freud is no less clear and specific as to the issue that divided the two. It did *not* involve the matter of sex. This is what Freud wrote:

> "In answering the question of when it is that a mental process becomes pathogenic, that is, when it is that it becomes impossible for it to find a normal discharge, Breuer preferred what might be called a physiological theory: he thought that the processes which could not find a normal outcome were such as had originated during unusual, 'hypnoid,' mental states. This opened the further question of the origin of these hypnoid states. I, on the other hand, was inclined to suspect the existence of an interplay of forces and the operation of intentions and purposes such as are to be observed in normal life." (6).

The issue between Freud and Breuer, as we see, revolved about the problem "when and how do mental processes become pathogenic." Breuer advocated a physiological theory, and Freud a psychological. Freud, in his own words, postulated as the primary cause of pathogenic mental processes "a thwart in the operations of intentions and purposes such as are to be observed in normal life." (6) At first blush this may seem like a difference of trivial significance. But in effect it was, and proved to be freighted with enormous implications, fundamentally irreconcilable with the basic ideational commitments of the 19th century world of science. In the then prevailing scheme of biological dynamics there was no place nor currency, for "intention and purposes," nor could they be rendered in terms of physical-chemical, or physical-mathematical equivalents — the only terms acceptable in the realm of science. Breuer first, and after him the vast majority of the medical and psychological confraternity rejected Freud's hypothesis.

That verdict has been largely reversed, and therein lies the essence of Freud's influence on contemporary medicine. How is that influence to be described? I believe it can be best summated under two headings, both of them foreshadowed and implicated in Freud's position vis-a-vis Breuer. The one can be labelled — the Instinct Theory, the other—Organ Projection. These labels are crude and not very informative, yet what they embrace is richly substantive and most significant.

Freud reintroduced into medicine *the function of meaningfulness in biological phenomena*—in his words of "intention and purpose." Not only did he demonstrate that nothing in the operations of the individual is ultimately irrational, — neither dreams, nor forgetfulness, nor slips of the tongue, nor errors, nor neurotic or psychotic behaviour, — but that the whole of the individual's living experience is animated with purpose and intention. Man is not merely a congelation of sentient matter buffeted about by the arbitrary forces of the world he lives in, moving through life in the crazy pattern of a rudderless ship. Man is rather a creature impelled toward self-fulfilment, guided by an indwelling architectonic pattern, and conditioned by the effects of antecedent experience. Each one of us has an appointment with Destiny, but ours is not the role of a passive sufferer. To the flat dimensions of matter and motion, of chemistry and physics, Freud added the dimensions of purpose and intention. Thereby he gave perspective to the vision of man in health and in disease. It is proper and common *now*, as it was not before Freud, to ask not only what caused an illness, but also what is its meaning to the patient, what purpose does it fulfill in his corrupted scheme of things. The question is neither valid nor answerable in every case. But that it can be asked is already a great good. More often than many among us suspect, the decisive clue to

the remedy of a disorder can more easily be gained from an assessment of the *function* of the illness, than from the study of its specific causes.

It was not so long ago that the practice of medicine involved but two major operations, the making of a diagnosis, in terms of statistically established anatomic and physiologic norms, and the prescribing of corrective or supportive therapeutic agents. I am told that in some parts of the world this order of medical practice is still common. But where medicine is practiced in the more modern perspective, physicians are less hobbled by the statistical norms and are mindful of the variables of individuality. Anatomic and physiological data still serve as the basis for, but not as the ultimate criteria of, diagnoses. The clinical profile is projected against the psychological, the economic, and the social background of the patient, thus providing a better perspective on all that is involved, aetiologically, therapeutically, and prognostically. The elements for this panoramic picture of the patient are contributed by a host of para-medical co-workers, chiefly psychologists, social workers, and public health nurses. Therapeutically the clinician is supported and made more effective by nurses, librarians, hospital sociologists, occupational therapists, rehabilitation workers, and "follow-up" personnel. I am omitting specific reference to the operations of the psychiatric associate of the clinician – primarily because I will treat of that association later.

It would not be proper to "claim for Freud" all these noteworthy developments in the clinical practice of medicine. But it is more than a freak of history that most of the services which aid in the treatment of the whole man, rather than singly and exclusively with his illness, have either come into existence or have acquired telling dimensions and wide acceptance since the time of Freud's advent on the medical scene. It is most certainly true that his was the "leaven that raised the loaf." And the best evidence for this is the presence in the ideational orientations and para-medical vernaculars, of concepts and terms deriving from the early and now largely superseded or discarded, Freudian formulations. Try discussing a patient with a social *case* worker, and you will promptly discover what I mean. But this is really quite understandable. Freud's metapsychology, his instinct theory, and his depth psychology penetrated into the cultural disciplines, into literature, the theatre, the plastic arts, anthropology, and even the law, deeper and sooner than into the bulk of medical thought and practice. Medicine was affected by Freud's ideas, collaterally and reflexly, as well as directly.

Neither time nor space will permit me to more than touch on the effects of Freud's theories in the fields of preventive and developmental medicine. To signal my meanings I need but point to the pediatricians, now so largely occupied with fostering the child's optimal development and progression, psychological as well as physical. It is currently expected that the pediatrician will serve also as a child psychologist, counseling parents on the "resolution of the Oedipal complex," on "sibling rivalry," on "manifest or repressed hostility," and so on. Nor is it feasible to trace the effects of Freud's ideas on educational procedures, industrial practices, criminal and domestic legal issues, and a host of other departments of social operations and relations proffering a variety of prophylactic occasions and opportunities.

I do feel, however, that we need to dwell longer and elaborate further Freud's Instinct Theory. He himself never fully, nor to my mind, satisfactorily, developed this theory. He largely took it for granted, and only parsimonously occupied himself with its exposition. In the end he postulated a bipolarity of instincts, Eros and Thanatos, the Life Instinct and the Death Instinct. Between

them, in animated agitation, but pursuing a chartered and purposeful course, life itself, made manifest in the individual, spins out its inherent meaning.

Freud's concept of the Death Instinct has fascinated me, and I spent some time and effort in fathoming its meaning and significance. The results were published under the title "Eros and Thanatos." A Critique of Freud's Death Wish." (7). In pursuing this theme I realized that Freud was less concerned with defining the variety of instincts made manifest in man's behaviours than with the ultimate goals for the realization of which they subserve as dynamic propulsions. Freud's Instinct Theory, in other words, postulated "an energy source," a source of libidinal impulsion, driving life toward its full eventuation. Given all this, the problems that particularly concerned Freud were—How and why is the eventuation of life, as witnessed in hysteria, in the neuroses and in the psychoses, impeded and deflected, and how are such untoward developments to be resolved and corrected?

The Instinct Theory of Freud had its counterpart in the Hormic Theory of McDougall, (8) whose profound and illuminating study of the emotions and instincts of man is vastly superior to that of Freud, and does in fact corroborate many of Freud's fundamental postulates. McDougall did not, however, deal with psychopathology, nor was he interested in psychotherapy. But Freud was. He was a psychologist in order that he might be a psychotherapist, and he stinted the former, for the benefit of the latter. But even in psychology Freud's emphasis was singular. He was more concerned with the goal-striving character of the living process, with the paths and patterns of its fulfilment, than with the specific sources and nature of its dynamic energy. He was willing to lump "all of that" under the obscure and amorphous designation of the *Id*—the primal *It*. The *Id* he defined as the reservoir of psychic energy or libido. To the *Id* he ascribed all philogenetic acquisitions; the *Id* is the source of instinctive energy. But what concerned Freud first and last was "repression," that is the thwart in the operations of intentions and purposes to be observed in normal life. His contention was that intention and purpose, when blocked or repressed in their biologically legitimate avenues of execution, are not thereby undone and annihilated, but are transposed, and are then acted out in masked form, in illegitimate, that is destructive, patterns. The latter phenomena fall, of course, in the special province of the psychiatrist. But the first component, that of "the intentions and purposes such as are to be observed in normal life" concern all of medicine, and particularly the internist and clinician.

The commitment of my paper is expositional rather than exortative. I am supposed to tell a tale rather than to draw a moral. Yet I cannot but observe that we are currently in great danger of missing out "on the intentions and purposes of life," so much are we taken up with and blinded by the effulgence of the phenomenal therapeutic whatnots that pour down upon us from the pharmacological and other industrial sources. The reversal of the untoward patho-phenomenal process being so very easy, why bother as to its cause or trouble as to its meaning? Here is a depression—a pill will reverse it! There is a psychosis—snap some synapsis, or convulse the gray matter, and lo—it is gone. Or is it? I shan't undertake to argue the issue, nor is it my intention to disparage the therapeutic and technical achievements of the pharmacological and other modalities. But I do feel that we are in some danger of losing precisely that illuminating interest and insight into the meaning of the living processes which Freud, more than any one, infused into medicine.

I conditioned my warning. I said we are in "some danger" of losing interest and insight into the meaning of the living process. The reason for my reserve derives from the second major influence which Freud's ideas have exercised upon modern medicine, that which I have labelled organ projection, and which will be more familiar to you as Psychosomatic Medicine. Few appreciate that psychosomatic medicine is itself a projection or a derivative of Freud's theories. Freud was, in effect, the first theorist in this "department" of medicine. And his initial, albeit indirect, formulation of the fundamental psychosomatic concept, he gave in the exposition of his difference with Breuer. In essence he opposed Breuer's physiological hypothesis with his own psychological theory which argued that the acting out characteristic of hysteria is in effect the somatic witness of psychological repression. This formulation carried two important implications, the first indissolubly conjointed psyche and soma, and the second rendered it possible to seemingly reverse the relational energic sequence between psyche and soma. Now it was possible to visualize not only "traumatic neurosis" but also "'neurotic traumata." In a word, not only was somatic experience mirrored in psychic operation, but also the reverse.

I have on numerous occasions protested the corruption inherent in the term psycho-somatic (9). It perpetuates despite the included hyphen, the dichotomy of soul and body, of psyche and soma. It also suggests, as I have myself phrased it, "an energic sequence" in which soma affects psyche, or psyche – soma. This is a misleading and erroneous formulation. Psyche and soma are in effect involved not sequentially but simultaneously, no matter in what order the results become manifest, physiologically, economically, or how. But, without at this point following up the protest to the term psychosomatic, and understanding its limitations, it can be affirmed that the psyche has been rendered more congenial, more familiar, more comprehensible to the clinician, in the formulation of psychosomatic than in any of the purely psychiatric representations–psychoanalytic, psychobiological, or otherwise. It is all to the good, and intending neither cynicism nor disparagement, I would add that it is of no great import whether the clinician does or does not have a precise grasp of the nature of the psyche and of its operation, so long as he understands and allows that it is a cofactor in anything and everything that he perceives and deals with in the human organism. There is a saying in the Russian that when a bear dances, the wonder lies not in how well he dances, but that he dances at all. To relate this to our theme–the wonder lies not in how well clinic medicine has "taken psychiatry to heart," but rather that it has countenanced it at all. And this, I would underscore again, clearly stands to the credit of Freud and to his ingenious psychological formulations.

Freud himself did not pursue the somato-clinical application of his theories. But two of his disciples did – the German, Georg Groddeck, (10), and the American, Smith Ely Jelliffe, (11). Both these men were exceptionally gifted. Both brought to psychoanalysis a breadth of instruction and a wealth of experience that singles them out among the followers of Freud. Jelliffe was the more scintillating, the more mercurial personality, Groddeck the more solid, and the better organized. Yet both were poetic and romantic souls. It is a pity that the pioneering works of both these men are not better known and more widely studied. But the impetus they gave, following Freud's initial insight, to the study of the psychosomatic aspects of clinical medicine, has carried it far. We now have more than a score of centres wherein psychosomatic studies are intensively and ingeniously cultivated and explored, and among the workers

enlisted in these pursuits are to be found some of our very best clinicians, and our most painstaking and exacting research workers. Mindful of this we need also to bear in mind that whosoever labors in this field, or gains by its harvest, owes a debt of recognizance to Freud. This was beautifully expressed by Victor von Weiszacker (12) of Heidelberg:

> "Looking at the history of medicine, and considering Freud's role in history, one, so to say, arrives at the distinction of "before Freud" and "after Freud;" and one then comes to the conclusion that there is no post-Freudian medicine that was not influenced by Freud. This conclusion will, of course, seem limited and negligible only to those who are altogether blind and deaf vis-a-vis Freud's magnitude and importance. For, if Freud is of such magnitude, this magnitude must have a meaning for medicine as a whole.
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> "At present the situation is this: That what was initiated as the problem of the neuroses is now projected unto medicine in its entirety. Medicine as a whole, as can be perceived, has been affected by the impact of depth psychology. And we may also reverse this perception. Freud's psychoanalysis must then per force appear as an important part, as a significant aspect of the progress of medicine as a whole. There occurred a reform of the art and science of healing."

At this point I must pay my respects to the title of my paper, which reads—The Place of Psychonalysis in Modern Medicine. As you must have observed, I have referred but little and seldom to psychoanalysis as such, electing rather to treat of Freud's metapsychology, his theories, and his formulations. I am sure you appreciate that this was deliberate and intentional. Psychoanalysis means different things to different persons. It is frequently used as a designation for all that Freud contributed to psychology, psychiatry and medicine. In this sense Freud and psychoanalysis are deemed to be synonymous. But this equation is both unhistorical and uncritical. It is a lumping designation and a tricky one. If one subscribes to this formulation, one is per force committed to an all-or-none position: you either take it or leave it, accept it or reject it. There is no alternative. This, incidentally, is the position of Freudian orthodoxy. But Freud himself affirmed that he was no Freudian, and in the spirit of his permissiveness I would limit the meaning of the term psychoanalysis to the therapeutic practices (not, mind you, to the theoretic formulations) developed by Freud, and now so staunchly defended by his orthodox adherents. Freud's therapeutic procedures and practices were historically warranted, but their unaltered perpetuation is indefensible and reactionary. Let us inspect these matters more closely. At the time Freud began his work, the treatment of nervous and mental disorders had a very limited armamentarium (13). There was electrotherapy, overt or hypnotic suggestion, and there was rest and moral re-education. Electrotherapy, as then practiced, appears to have been so much hocus-pocus, or at best a vague and crude form of suggestion. Rest proffered refuge, and the opportunity to recuperate, from the fray, but no basic solution for underlying difficulties. Suggestion, overt or hypnotic, as well as moral re-education, constituted in effect, the imposition upon an already vulnerable personality of the ideational and affect patterns of a "foreign body." I think you will agree it was a miserably improverished armamentarium. (13).

Taking his cue from Breuer, Freud began to treat his patients by the so-called "cathartic" method. The patient was hypnotized, but instead of receiving "suggestions," the patient was encouraged to talk. He did, and hence the therapy was frequently described as a "talking-out cure" and as "chimney sweeping." Later, Freud gave up hypnoses and instead encouraged the patient to tell of his problems and difficulties without restraint. This was the "head squeezing" stage, when Freud was not averse to placing his fingers on the forehead of his patient, encouraging him to recall—to remember. Finally Freud developed the "couch-

and-free-association" pattern of therapy now common to the orthodox analyst. The couch, we are told, was Freud's own refuge. He could not bear being stared at hour after hour. But free association was quite a different matter– it was crucial to his theoretical formulations. It was the reciprocate of repression. For–to express the Freudian formula at its simplest–the neurosis was in essence the acting out of repressed "purpose and intent;" the repressed was resident in the Unconscious; to the Unconscious the Conscious has no direct access. Dreams slips of the tongue, and the errors of everyday life do offer, so to say, depth soundings of the Unconscious. But only prolonged and unhampered free association could in effect–like the pipes of Orpheus–bring Euridice back from the Stygian depths of Hades, that is, bring forth into awareness the repressed materials. There is much poetic meaning in this myth, illuminating both repression and the exortative process of recall by free association. And only those who have had experience with free association, who have undergone or have witnessed the liberating, emancipating, effects of repressions brought into awareness, can appreciate the powerful psychodynamics operational in this process. These eventuations cannot easily be imagined, for they are outside the embrace of ordinary experience. Realization can come only by way of experience, but the experience itself is *not* hard to come by. What I mean is that there are no great tricks or mysteries involved in tapping the Unconscious.

Having stated all this, one must inquire more closely into the nature of the elements under consideration–in other words, we need to define what we understand by repression, the Unconscious, and by free association. The impulsion is there, but I'll not yield to it, beyond affirming that both repression and the Unconscious are psychological formulations to which Freud gave certain unique qualifications, but which were current and broadly appreciated long before Freud came upon the psychological scene. Free association, although also anticipated before Freud, by Galton among others, is more substantively his unique contribution.

But then, what is free association? Operationally it is the uncensored, uninhibited, verbalization of everything and anything that comes to mind. Psychologically it is the creation, intra-psychically and environmentally, that is, in the therapeutc situation and relationship of, as complete as possible, ideational and verbal permissiveness. Inner permissivenesses, rather than "endless jabber" is the touchstone of free association. But, be it noted, it does not follow that the more disorganized and the more inconsequential the patient's recitation–the more freely is he associating and the deeper is he reaching into his Unconscious. But this, I fear, is carrying us a bit too far into the esoteric technology of specialized psychotherapy. More immediate to our own interest is the historic verity that Freud, in his emphasis on free association and on the tacit passivity of the therapist has taught us, once again to appreciate the value and the importance of listening, of allowing and encouraging the patient to talk. Freud has *taught* us but I am not so sure we have *learned* the lesson. I have yet to see a clinical history form which begins with the heading "Present Complaint." All those I know of first drag the patient through the morass of past histories relating to grandparents and parents, to siblings and childhood ills, to accidents, operations, etc., and even when all these are duly asked, the patient doesn't really often get an ample opportunity to talk freely–to get things off his chest.

Another postulate of psychoanalysis, which has gained acceptance in current medicine, is the inherent meaningfulness of everything that the patient presents. The patient is not likely to be confronted, as he was but a short time ago, with the injunction–"Get it out of your head, it's all nonsense," nor with the cock-

certain oracular affirmation—"It's all in your imagination—and you'd better forget it." To listen and to seek to understand, to listen attentively, receptively, sympathetically, in the conviction that what the patient has to say, even though seemingly meaningless, nay even non-sensical, *yet has meaning*, and that it is the bounden obligation of every therapist to search for and to fathom that meaning—is the vital burden of the instruction and inspiration which psychoanalysis brings to medicine.

I have treated of free association at some length because *it* and the *couch* are "brand marks" of the orthodox psychoanalyst, and distinguish him, witness the *New Yorker* cartoons, from all of his psychiatric brethren. But, instructive as Freud's therapeutic technique has been for psychiatry in particular, and for medicine in general, the technique itself is provincial and parochial to the broad realm of psychotherapy. Free association is effective in bringing into awareness repressed materials, and is emancipating *when the neurotic disorder is due to repression.* But, as experience has shown, and even Freud had to acknowledge in the category of character neurosis not all neurotic disorders are due, to conflict and repression, and those *others* so very numerous in psychiatric experience, are not to be cured by tapping the Unconscious. As well expect a man to fatten by sucking on his own spittle, as that a defective, or distorted personality, or the victim of deprivational experiences, should grow into effectiveness and maturity by the endless audition of his own history and grievances. To effect a cure, in such instances, much more than free association is required. The total personality needs reorientation and re-education, and this implies much unlearning as well as much learning anew. This is a therapeutic enterprise in which both patient and psychotherapist must play calculated and active roles.

By the token of all this I am sure you will appreciate why I have taken pains to distinguish between Freud's metapsychology and theoretical formulations, and psychoanalysis as a psychotherapeutic procedure. While the latter will be, as it already has been, substantially absorbed into psychiatry, and will thus have no further warrant for a separate "apartite" existence, Freud's metapsychology and theoretical formulations will long sustain their historical identity and continue to catalytically affect both medical and cultural thought. This is not at all strange. Ideas are ever more viable, more potent, and more fertile, than the technologies associated or derived from them.

In the realm of ideas, Freud is a colossus, and his stature will grow with time. The foibles of his personality, and the frailties of his system which we sport to point out, will in the perspective of time be as nothing to the transcending significance of the insight he brought into a benighted world: a world drunk with the conceit of its sophistication, an ungodly and arrogant world. This man, who like the Biblical Joseph, was discountenanced by his brethren; this man, who also read the meaning of dreams, will be celebrated as the one who recalled to man his kinship with all of life, who in the modern vernacular spoke of man the microcosm, and of his relation to the universe, the macrocosm. It will be recognized in the future, even better than it is now, what it meant, and the courage it required, to make man mindful of the fact that life was more meaningful than the seemingly fortuitous, haphazard, interplay of matter and motion, that life had meaning eventuated in intention. He will be esteemed for his brillant—if at times erratic—protest against, his defiance of, the narrow and corrupting ideas of nineteenth-century science. Freud, who eschewed philosophy and espoused science, will yet be recognized as having greatly redeemed and vastly enriched the philosophy of science—and most notably the

science of medicine. In the history of modern medicine, Freud and his psychoanalyses will have, as they currently have, a position of unique significance.

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ANNUAL MEETING OF THE CANADIAN PSYCHIATRIC ASSOCIATION

Friday, June 15, 1956—Chateau Frontenac, Quebec

SCIENTIFIC MEETING

9.30 A.M. "*Objective Approaches to Treatment in Psychiatry*"
Dr. Leo Alexander, Boston, Mass.

10.45 A.M. "*Recent Work on the Problem of Schizophrenia in General and Hallucinogens in Particular*"
Dr. John D. Lucy, Regina, Sask.

2 P.M. "*Considerations generales sur la psychiatrie d'hier et aujourd'hui dans la Province de Quebec*"
Dr. Lucien LaRue, Quebec, P.Q.

Discussants for each of the above papers will be announced later.

BUSINESS MEETING 3.30 P.M.

RECEPTION AND DINNER 6.30 P.M. – River View Dining Room. Psychiatrists who are arriving in Quebec prior to June 15th and who wish to visit the psychiatric facilities in the Quebec area are asked to contact Dr. Gustave Desrochers or Dr. Yves Rouleau at Hopital du St.-Sacrement, 1050, Chemin Ste-Foy.

Tours will be arranged for the ladies on the morning of Friday, June 15th.

EDITORIAL

SIGMUND FREUD

(1856 - 1939)

Sigmund Freud was born in Freiberg, Moravia, on May the 6th, 1856. He died, a welcomed refugee from Vienna, on the 23rd of September 1939, at 20 Maresfield Gardens, London.

His discovery of the psychoanalytic method of investigation and treatment will be, without doubt, his lasting claim to fame. Perhaps what made his career unique was his ability to develop his discovery. He was able to develop his discovery after applying it himself. During his 'self-analysis' he overcame to a great extent his own neurosis and was able to trace its development to his infancy. His luckily preserved and recently published letters to his friend Fliess illuminate this period of his life.

Freud wished his work to be his memorial but psychiatrists are fortunate that one of his chief collaborators has become his biographer. Dr. Ernest Jones has completed the first of three planned volumes. In reading this biography not only does one make contact with a great man but with the development of an idea and with an epochal change in man's attitude to man.

Freud was reared in a large family. The exceptional abilities he showed from an early age were respected and fostered. His interests were wide and his linguistic prowess was on a par with his genius. He entered medicine where his earlier biological interests led to special interests in physiology, histology and neuropathology. Later he entered the clinical field of neurology and here he soon encountered the problems of neurosis.

Freud was no longer young when he found physiological and neurological theory inadequate for work with the neuroses. He began to develop theory and practice based on the talk and behaviour of his patients. At first the most interesting facts were those obtained under hypnosis but it was not long before he discovered that all he needed to do was to tell his patients to talk. It was soon apparent that listening to patient's dreams was not waste time but might give insight into the significant conflicts the patient was disguising from himself. Later it emerged that the internal conflict between instincts was more significant than the conflict between the ego and the environment regardless of how apparent and pressing this latter conflict was. Such facts led to his hypotheses of dynamic unconscious instinctive forces which could become conscious and could be modified. These new facts led him to view people's lives as wholes and to see new meaning in the details of infantile and childhood development. He saw the loves and hates of the nursery as creative and destructive, as erotic and murderous in the child's imagination.

The development of his work with his patients and himself did not progress without overcoming resistances, both internal or external. Year by year he published his experiences in very persuasive language.

Colleagues who tried to repeat his work soon discovered their own difficulties and sought quicker and fuller understanding of themselves from him in a personal analysis. Gradually his teaching has developed until at present the method of training consisting of personal analysis, lectures and seminars and analysis of patients under supervision has become widespread.

Freud believed that his hypotheses would be slow in receiving general interest. He believed that he understood some of the reasons why psychiatrists shied away from prolonged personal attempts to understand neurosis but he believed that he had discovered a way for man to understand the nature of himself and his fellowmen, whether ill or well, to a depth not previously known and that this way would not likely be forgotten.

The publication of the "Interpretations of Dreams" in 1900 and "Three Essays on the Theory of Sexuality" in 1905 brought radically new ideas before psychiatrists. In the 50 years since then, first Freud, and later his students, continued to stimulate psychiatric thought, psychiatric research and psychiatric practice.

Although psychoanalysis has implications beyond psychiatry and medicine, psychiatrists can justly celebrate May 6th as the centenary of an illustrious pioneering genius.

W.C.M.S.

TRAINING IN PSYCHIATRY
At
McGILL UNIVERSITY

The Department of Psychiatry, McGill University, Montreal, has a limited number of openings for training, and applications are now being considered.

Applicants must have graduated from an approved medical school and have had a general internship of one year.

The four-year Diploma Course provides general basic preparation during the first two years. The last two years provide special patterns of instruction for those: (a) planning to enter the field of general hospital, community or university psychiatry; (b) preparing themselves for a career in child psychiatry; (c) intending to enter the field of research psychiatry.

Credit may be allowed for previous training.

Shorter periods of instruction may be arranged, as well as instruction in special fields.

Full training in psychoanalysis also may be undertaken within the Department of Psychiatry by suitably prepared candidates. Separate application for this training is required.

All those accepted for training are assigned to one of the seven teaching centres in Montreal. These positions carry with them board and lodging, or, in lieu of lodging, a living-out allowance together with an honorarium ranging from $40 to $100 a month, depending upon the clinical position to which the applicant is assigned. For those in the advanced years of the course, clinical positions carrying higher salaries are available. In several centres, additional emoluments of $1800 a year are available, mainly in the form of bursaries, these being issued under certain conditions in regard to which information will be given on request.

Applicants should write to the Chairman of the Department of Psychiatry, McGill University, Montreal, Canada.

EFFECTS OF THE DECREASE IN SENSORY VARIABILITY ON BODY SCHEME*

H. Azima, M.D. and Fern J. Cramer-Azima, M.A.
Montreal, Canada

A wide variety of reports have dealt with the phenomena of body-boundaries, body-image, ego-boundaries, bodily-ego, social field, depersonalization, "being-in-world" (The 'Dasein' of Existential philosophy), or what Scott (1) recently has reconceived as Body-Scheme, etc. They have all indicated the increasing recognition of the close connection of the individual to his world, and the difficulties that arise when one attempts to form isolated systems of 'the individual' and 'the world'. An impetus was given to these problems by recent experiments on perceptual isolation in Hebb's laboratory (2). Thompson and Heron (3) reporting the effects of restriction of environment on exploratory activities in dogs, and experiments of Bexton, Heron and Scott (4) on the influence of decreased variability in sensory environment on 'normal' human subjects, revealed the immediacy of the need for a close contact with the environment and the proper functioning of the organism. Our attention was particularly drawn to the above experiments in connection with the disorganizing effect of a relative perceptual isolation on bodily experiences. Bexton, Heron and Scott noted in two subjects the feeling of 'otherness' and bodily 'strangeness'. They did not however investigate this particular aspect which was clearly related to the alteration of body-image, but focussed their attention mainly on the changes of cognitive processes. The present experiments were undertaken to study these related problems.

There has been growing evidence that in a particular therapeutic setting a psychic disorganization may initiate beneficial results. Cameron's concept of 'psychic implantation' (5, 6) and the purposeful initiation of a rapid breakdown of psychological defences, Margolin's "anaclitic therapy" (7), Azima and Wittkower's method of "gratification of basic needs' in the treatment of schizophrenics (8), etc., all imply the relative organizing effects of a planned disorganization. It was felt that perceptual isolation, if applied to different pyschopathological states, would shed some light on the problem of disorganization, particularly in relation to the bodily experience and body-scheme.

Method

Six neurotic anxiety states, two obsessive compulsives, five depressions and two hebephrenics were put on partial perceptual isolation for a period of time ranging from 2 to 6 days. The average age of the patients was 40 years (Table 1).

The isolation setting consisted of an ordinary single hospital room containing all facilities, and situated farthest from the center of the ward. The room was darkened by means of heavy curtains on the windows. The patient remained in the room throughout the isolation, lying or sitting in bed, wearing translucent eye-goggles, and with hands and arms encased to a few inches below the shoulders in cardboard cylinders. To muffle the sounds two heavy curtains were erected before the entrance door within a distance of 2 meters from each other, and the patients' ears were plugged with cotton. Patients were put on demand feeding and demand evacuation, and if possible they were fed, or taken with the apparatus on to the toilet (within the room). Face and teeth were washed once a day. Except for the dark setting and some changes in nursing care the apparatus

*From Allan Memorial Institute of Psychiatry, and McGill University. The authors acknowledge their deep gratitude to Dr. D. E. Cameron for his guidance and his continuous encouragement in this project and to Dr. C. W. M. Scott for his helpful suggestions and comments.

was quite similar to the one used by Bexton, Heron and Scott (4). However, the technique used differs in two major aspects from the one used by the above mentioned authors: the first is that of motivation, psychological attitude, and the nature of the subject-observer relationship, and the second relative decrease of verbal communication. Before the isolation the procedure was explained in detail to the patient as a method of investigation and treatment aimed at cutting

TABLE I. SUMMARY OF THE CASES.

Case No. and Diagnosis	Age and Sex	Days of Isolation	Overt Behavior	Changes in body-scheme	Hallucinoses and other changes	Emergent Dynamics	Results
1. Anxiety neurosis	29 F.	3	Inhibited, depressed	Moderate	None	Agression	Less depressed socialization
2. Anxiety hysteria	30 F.	6	Irritability tenseness	Moderate	Dizziness	Agression	Less depressed aggressive
3. Anxiety neurosis	25 F.	4	Calm Co-operative	Marked	Visual hall. Dizziness	Agression Sexual	Less depressed
4. Anxiety neurosis	35 M.	1½	Irritability Anxiety	None	None	Aggression	No change
5. Mixed Neurosis	31 F.	1	Depression Hysterionics	None	None	Aggression	No change
6. Anxiety Neurosis	40 F.	2	Agitation Tenseness	None	Dizziness	Aggression	No change
7. Depression	30 F.	6½	Calm Cooperative	Marked	Dizziness	Aggression Sexual	Improvement Temporary
8. Depression Agitated	66 F.	4	Agitation Anxiety	None	Dizziness Thirst	Sexual	Less Depressed Socialization
9. Depression	34 F.	6	Aggression Self-assertive	None	Visual hall. Food agnosia	Sexual	Improvement Lasting
10. Depression Agitated	60 F.	6	Aggression Agitated	None	Disorientation	Aggression	Less depressed
11. Depression	41 F.	5	Calm Inhibition	Marked	Dizziness Itching	Aggression	Improvement Lasting
12. Obsessional neurosis	39 F.	3½	Anxiety, Fear, Cooperative	Marked	Visual and auditory hallucinations	Aggression	Paranoid Psychosis
13. Obsessional Neurosis	25 F.	5	Happy exhaltation erotic	Marked	Visual hall. Food-agnosia	Aggression Sexual	Paranoid Psychosis
14. Hebephrenia	26 F.	7	Withdrawal Cooperative	None	None	Aggression Sexual	Socialization
15. Hebephrenia	19 F.	4	Restlessness Hyperacitvity	Moderate	Visual hall.	Aggression	No change

down external stimulations. They were told that they could terminate the procedure at any time they wished. The patients accepted the isolation in the main optimistically as a method of recovery from their psychological handicaps. The decrease in verbal relationship was partially realized by cutting down the verbal exchange with the patient. Patients were checked every hour, but they were interviewed only once or twice a day, for a period of time ranging from 20 to 30 minutes. This interview was conducted in a psychotherapeutic fashion. During the hourly checking time conversation was neither initiated or encouraged, and if patient began to talk he received no answer.

Each patient was taken as his own control, and the longitudinal picture of his history was used as a base line for the evaluation of changes.

The changes in psychodynamics were investigated through the analysis of patient's dreams and fantasies, free associations, Rohrschach and Figure Drawings. All patients were tested before isolation with a partial Wechsler Bellevue Scale, Figure Drawing and Rohrschach. Rohrschach was repeated only in those patients who had remained in isolation more than two days. We found Figure Drawings as recommended by Azima (9) to be the most valuable guides for a longtitudinal study of psychodynamic changes occurring in a short span of time. For this reason Figure Drawings were repeated, if possible, every other day, and the first day of post isolation period. Three patients were investigated in regard to the sensitivity of their vestibular apparatus before and after isolation. The reason for this was the emphasis some authors like Schilder had placed upon the important role of the vestibular apparatus on maintenance of body-image. Most of the patients were on a supportive form of psychotherapy.

Results

We shall limit ourselves to a few brief case reports in each diagnostic category, with particular emphasis on the alterations of body-scheme and emerging psychological events. We will refrain from discussing the pre-isolation psychodynamic states of each patient because (a) owing to the range of clinical pictures, no common dynamic constellation would have been expected prior to isolation, and (b) a review of the literature demonstrates (10, 11, 12, 13, 14, 15, 16, 17, 18) dynamics referrable to almost all stages of development and to almost all layers of psychic structure have been found in individuals suffering from alteration of body image or depersonalization states. Thus we focussed our attention particularly upon the emerging psychological states and action tendencies during isolation. This proved to be rewarding.

All in all, 8 cases out of a total of 15 showed a depersonalization state with a varying intensity of visual, auditory and gustatory hallucinoses (table 1). All cases who evidenced perceptual alterations had remained more than two days in isolation. The reverse was not true.

A beneficial therapeutic effect was observed in the 5 depressed cases, in two this effect was lasting. The two obsessional neurotics manifested acute pychotic episodes. They were treated with electric shock, which resulted in improvement in both paranoid and obsessional features. The remaining 8 cases showed a moderate increase in motivation, socialization and self-assertiveness. All the above changes, particularly those related to body-scheme, were assumed to be significant because (1) they were absent in the longtitudinal picture of the patient's history prior to isolation, and (2) they were concomitant to, and comprehensible in regard to particular psychodynamic changes emerging during isolation. These changes consisted of the appearance of aggressive tendencies in all cases. This aggression was either overtly expressed, or was suppressed and introverted. In

all cases who showed alteration of the body scheme aggressive drives were found to be suppressed and introverted. In conclusion of this paper we shall discuss this particular problem more fully. There were no significant alterations in the cognitive tests (abbreviated Weschsler Bellevue). However, because we did not study the cognitive changes during isolation, and our post-isolation testing in this connection was not extensive, we cannot rule out the possibility of change in this area as has been reported by Bexton, Heron and Scott (4).

The study of vestibular apparatus in three cases who manifested a depersonalization syndrome during isolation showed no abnormalities.

Case I:

A 30 year old anxiety hysterics who complained of weakness, loss of weight and adbominal cramps. Her anxiety dated back to the age of 13. The major dynamics appeared to be centered about marked dependency and hostility which she was unable to express. She remained on isolation for 6 days. On the first 4 days she became gradually more depressed and tense. She felt as if she were 'going into a daze' and 'dizzy' on several occasions. On the fifth day she reported: 'my whole body was away to-day . . . I had no body at all, just my head was counting . . . as if the rest of my body was gone. Only my head was on the pillow, floating away . . . my arms feel very heavy at times.' She experienced these phenomena irregularly which lasted for a few minutes. On the sixth day she became very irritable towards the nurses and terminated the isolation.

The study of her psychodynamics during isolation from Figure Drawing analysis showed immediate emergence of aggressive tendencies which were repressed on the 4th day, but re-emerged with greater intensity on the 6th day. Figure I shows vividly these changes: marked expansivity on the second day (2nd drawing), with the left hand coming from behind her back as if to grab;

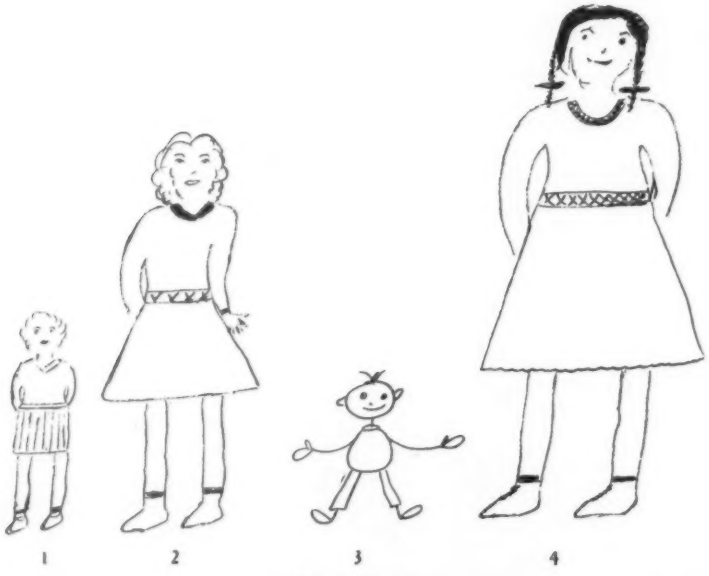

Fig. 1. Case 1

Drawing 1. Pre-isolation.
Drawing 2. 2nd day of isolation.
Drawing 3. 4th day of isolation.
Drawing 4. 6th day of isolation.

on the fourth day she tried to suppress these feelings. 'This is just a little kid playing around' (3rd drawing), but the boxing gloves indicate the nature of the process; finally on the last day there is a burst of expansivity. The aggression, never overtly expressed except on the last day, was directed against the male figure in the drawing which showed considerable and continuous decrease in size throughout isolation. (The drawing on the sixth day was one fourth the size of the pre-isolation drawings). There were no changes in indices related to the sexual sphere.

Post-isolation cognitive tests revealed no particular change. Clinically, in post isolation period, she showed increasing self-assertiveness and felt less depressed.

Four other neurotic patients accepted isolation. Two of these, both anxiety states, could not tolerate isolation more than 2 days, and became overtly aggressive and resentful. They showed no change in body scheme. Two anxiety hysterics remained in isolation for 4 days. They both showed numerous changes in body scheme such as the feeling of the absence of body parts, floating in the air, uncertainty about the position of the limbs, etc. The psychodynamic investigation during isolation indicated an introversion of aggressive tendencies in both cases. In one case (a 25 year old female) clinically there was a marked release of sexual drives (exhibitionistic phantasies, erotic thoughts in regard to the therapists, etc.) concomitant with the subjective disappearance of the feeling of 'hatred' which the patient had expressed on the first two days of isolation. Figure drawings showed a gradual disappearance of aggressive indices (closure of the mouth, decrease and finally disappearance of the hair, decrease in line, pressure, etc.). This patient showed a relative improvement in her post isolation phase, felt more self-assertive and less depressed. She was discharged on follow up psychotherapy.

Case II:

A 25 year old male who was suffering from a chronic obessive state associated with marked motor compulsions. These ritual like compulsions consisted of violent rythmic movements of upper extremities, accompanied by nasal hacking and spitting. He explained these phenomena as his method of 'physical blocking' of aggressive actions. 'The reason I move is that I don't want to hurt myself . . . it is a measure of security'. He remained on isolation for 5 days. His motor compulsions decreased considerably ('the arm bands have a soothing effect') and on the second day he reported: 'Sometimes I feel far away from this room . . . sometimes I am not aware of what is going around me. I am afraid that something might happen to me.' He manifested some eroticism, and wanted to be 'mothered' by nurses. Both his appetite and erotic behaviour increased on the third day. On the 4th day he reported a short episode of 'blindness'. He was unable to identify some food. His eating habits became much poorer: he ate voraciously with his hands, making strange noises and dirtying himself all over. The disorganization manifested itself in part as a marked sexual disinhibition in the form of spontaneous orgasms and overt eroticism. His motor compulsion remained in abeyance. On the 5th day he manifested an acute hallucinatory psychotic episode associated with depersonalization: 'I feel I am not here. I am scared. I want to grab somebody and hold on. I am in another world. I am afraid I am not going to come back. I feel distended. I am going up . . . a sort of dream . . . I am afraid I am going to change. I feel like I am going out of this world, going away, floating away. I don't feel real, as if I have two spirits. My hands are crossed but I don't feel them. I don't feel part of the world. I find myself in a different world . . . I see legs . . . I see my

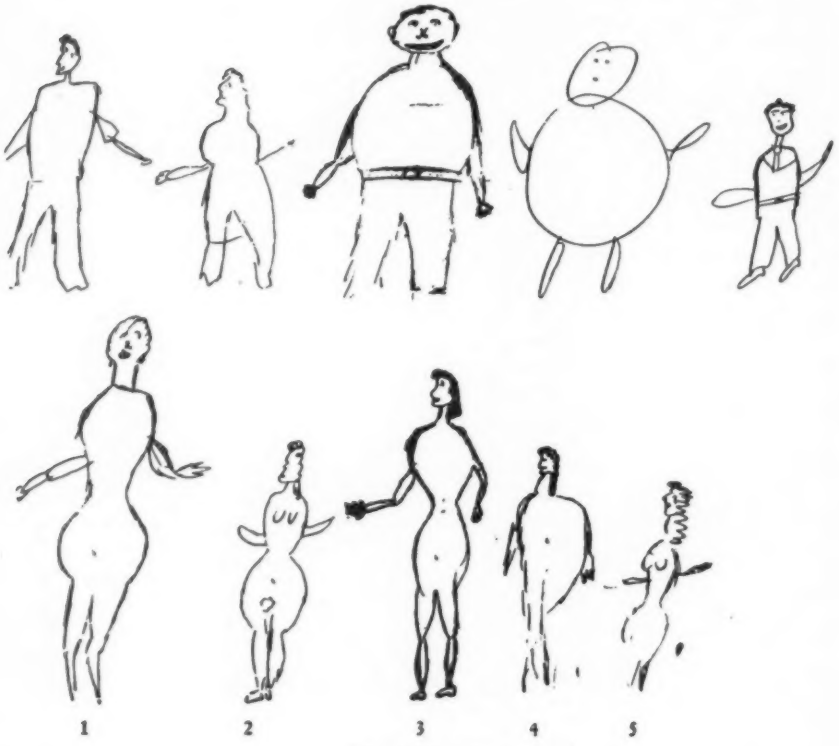

Fig. 2. Case II

Drawing 1. Pre-isolation.
Drawing 2. 2nd day of isolation.
Drawing 3. 3rd day of isolation. Note the appearance of aggressive indices.
Drawing 4. 5th day of isolation. Note marked disorganization.
Drawing 5. Post-isolation. Note relative reorganization in male figure.

parents, as if I am looking from far away. They look small, etc.' Because of the appearance of this psychotic episode, sexual disinhibition and regression of behaviour, isolation was discontinued.

Figure Drawings indicate the emergence of both sexual and aggressive tendencies barely controlled (appearance of genitals and breasts, increase in size, the appearance of teeth, fingers, etc.). The release of aggressive tendencies was particularly marked on the third day (Fig. II, Drawing 3). It should be noted that on the same day the patient's behaviour was least aggressive, and his motor compulsions had significantly decreased. Inferring from the fact that his motor compulsions were a measure of security against his hurting himself, we could assume that on this particular day he WAS hurting himself, i.e., he was turning his aggressive impulses against himself. Less than 48 hours later the Figure Drawing showed complete disorganization (primitivization, simplification, fragmentation, absence of details, roundening, etc. Drawing 4, Figure II) concomitant with the acute depersonalization state.

The post isolation Rohrschach indicated an impairment of reality testing and the appearance of some paranoid trends. Figure Drawings, however, revealed

considerable reorganization particularly in respect to the male figure. (Fig. II, Drawing 5.

Because of the acute psychotic episode and the appearance of paranoid tendencies the patient was treated with electric shock. With this treatment he showed much improvement in both his paranoid and compulsive features.

Another case of chronic obsessive-compulsiveness developed an acute psychotic episode with depersonalization after 4 days of isolation. This patient also was treated with electric shock, with subsequent relative improvement.

Case III:

A 41 year old female was suffering from a depressive state with suicidal ideation. She tolerated isolation for 5 days. Except for the first few hours of isolation when she complained somewhat about the arm bands and was resentful, she appeared quite calm and cooperative throughout the isolation period. On the second day for a short time she was unable to state where she was. On the third day she reported: 'It seems that at times I am losing part of my body . . . my legs, as if there was nothing in bed. It is hard to describe. I am in bed, then a minute later I am not there anymore . . . as if I had lost control of my body . . . movement does not bring my body back.' These experiences increased on the 4th day and she became gradually more depressed. Because of increasing depression and apathy, isolation was discontinued on the 5th day.

The study of her dynamics during isolation through Figure Drawing analysis revealed what appeared to be the reverse of her clinical behaviour. While clinically she had remained non-aggressive, submissive, and increasingly more depressed, her Figure Drawings showed increasing aggression (gradual increase in size, the appearance of fingers and toes from the second day on, oral emphasis, etc.). A considerable disorganization in the drawings was noted on the second day, and on the third day she drew only head and arms. She had no perception of her body from the neck down. On the fifth day the findings in the drawings (appearance of ears) and in Rorschach suggested the beginning of a projection of aggressive tendencies.

In the post-isolation period the patient showed a relatively rapid improvement. Her mood changed, she became cheerful and self-assertive and began to associate. This improvement continued and the patient was discharged without further treatment. Her Figure Drawings and Rorschach showed increasing organization, decrease in tension, and reversal of mood.

In this case it was felt that the disorganization initiated by isolation was followed, clinically and in the psychological test, by a rapid rebound process of organization. It seemed that, at least in part, the reorganization mood changes could have been attributed to the projection of the aggressive impulses at the end of isolation. During the isolation the increase in her depression was concomitant with the suppression and introversion of aggression.

Case IV:

A 30 year old female suffering from a depressive state, accepted isolation for 6 days. On the third day she reported: 'my head occasionally starts to spin, and then sometimes I feel I am not here . . . it takes about half an hour to think back and get my bearings.' These feelings become intense during the following two days. On the fifth day she stated: 'Sometimes I don't feel the bed . . . I feel that I am in the air floating . . . it lasts about 10-15 minutes. I float lying down as in a cloud (?) I can't explain, you have to go through it to know . . . my arms weren't there from shoulders down . . . my bed is occasionally rocking, swinging.' On the sixth day the depersonalization state increased, she became

restless, resentful, broke an arm band, and terminated isolation. Throughout isolation, except for the last day, she had remained calm, rather cheerful, very cooperative and dependent.

The study of her psychodynamics during isolation with the aid of five consecutive dreams, and her Figure Drawings, revealed the emergence of aggressive tendencies during the first few days, and their subsequent suppression and introjection. She dreamed for three nights that she was 'in her boat with her father' fishing (with the therapist in isolation). This was followed by the 'Doctor eating . . . the cow killed, blood on the snow' (she kills the therapist because she feels sexually assaulted by him. Patient is frigid like snow); and afterwards dreams of 'going home in a train . . . a train wreck, a woman bleeding' (she punishes herself for killing her father). These dreams were not interpreted to her, but their meanings were inferred from her associations. Figure Drawings brought out a rapid withdrawal and depression associated with evidence of suppressed aggression (sudden decrease in size, loss of hands and arms, oral emphasis).

In the post isolation period the patient showed considerable clinical improvement. Her mood changed, she became self-assertive and began to associate. Concomitantly Rorschach and Figure Drawings showed immediate increase in feelings of well being and desire for human contact. The improvement continued for 4 days, and then gradually the patient returned to her former state.

It should be noted that of three other depressed cases who accepted isolation, one showed marked improvement leading to her discharge, and the other moderate, temporary improvement. Behaviorally and psychodynamically all showed overt and considerable aggression; one of them actually wanted to attack the therapist. None of them, however, showed any change in body scheme.

Case V:

A 19-year-old male, presenting a hebephrenic reaction, was put on isolation with the purpose of promoting a regressively satisfying environment in which many of his needs could be satisfied, and his anxiety about the relationship to the world reduced. He remained on isolation for 4 days. On the first two days he manifested increasing withdrawal and blocking. On the second and third days he experienced elaborate visual hallucinoses. On the third day he had some feelings of estrangement. These feelings increased on the 4th day. "I see different objects now, broken down shacks, pen, etc. . . . I can't feel my arms anymore . . . my hands and legs, I just can't feel them (what do you think has happened?) I don't know, I just don't feel them (patient moves his arms) still don't feel them . . . Ah, it's coming back (where?) my left arm.' Although he was sometimes restless he never felt aggressive and he was pleasant. The study of his psychodynamics during isolation through his Figure Drawings and the analysis of one dream ('my father died'), revealed repression of aggressive tendencies which was particularly evident on the fourth day (absence of hands and feet). However Figure Drawings revealed also some degree of re-organization (better details, better proportion, etc.), increasing need for social contact and oral demands.

During the post-isolation period the patient showed a transitory improvement which lasted about 4 days. He became more communicative, was less vague and more cheerful.

Contrary to the above case, a hebephreno-catatonic girl who remained in isolation for 6 days showed no perceptual alterations. Behaviorally she manifested overt hostility, became talkative and self-assertive. She experienced several spontaneous orgasms, and verbalized memories of her 'sexual' adventures.

Discussion and Conclusions

The foregoing data demonstrate that isolation, with the technique described, provokes a disorganization of psychic structure in some mental disorders irrespective of descriptive diagnosis. This disorganization in some cases leads to either a temporary or long lasting reorganization of some aspects of a previously unsteady psychich state. However in a few cases the disorganization initiated by isolation took the form of what may be called a depersonalization syndrome particularly affecting body-feeling, body-image, and bodily experiences in relation to the world.

This study brings further argument for the immediacy of relationship of the individual and his world, and further evidence that a planned disorganization may lead to a type of rebound process of reorganization. The primary theoretical problem is to determine the etiology of this disorganization and changes in body scheme. Why does the body scheme dissolve when one covers the eyes and hands of an individual, puts him in a closed dark room, and talks to him only for one hour or so every day? What is the role of decrease in sensory variability? What is the role of emergent dynamic processes, and how are they related? We do not think that the present data, and the information available in this area, can furnish a definitive comprehensive formulation from three relatively different points of view: Organic (physiological), Dynamic (psychological), and Organo-Dynamic (relationship). The separation of these three hypotheses is arbitrary and done only for the sake of analytic clarity. No final validity is claimed for any of them.

(1) *Organic (Physiological) Hypothesis*

There are two main arguments for this hypothesis:

(a) the probable reduction in the variability and kind of sensory input in isolation; and

(b) the almost undisputed existence of regions more or less locatable in the brain which regulate the integrity of bodily experiences (somatognosic zones). The problem is how to relate these two.

What isolation produces may be considered as a reduction in the variability and the kind of afferent impulses. Bexton, Heron and Scott (4), following Hebb's conception, have attempted to explain the changes which occur during isolation as related to the non-specific function of stimuli which alters the maintenance of arousal, or what we called 'the presence in the world' (19). This arousal and this presence may depend on a certain intensity and variability of sensory input. Sharpless (20) has demonstrated that a stimulus loses its arousal affect on the ascending reticular system after it has been repeated many times, and has become monotenous. It may be assumed that the integrative function of this reticular system as maintained by Magoun. Jasper and their co-workers (21, 22, 23) depends upon an optimum intensity of afferent feeding. It is well known that the decrease in sensory stimulation is a prerequisite for going to sleep. It is known too that through a diffuse projection system (22, 23, 24, 25) the reticular ascending system is related to cortical areas. It may be inferred from these and other observations, which have led Penfield to postulate a Centrencephalic area in the midbrain (25), that the integration of somatognosic zones in the lower parietal region depends upon an optimal degree of intensity of stimulation from the diffuse projection system. If this latter system depends for its integrative function on a constant but optimal sensory feeding, and if isolation decreases this feeding below an optimal level, it is likely that isolation may cause a disorganization of somatognosia and changes in body scheme.

The problem of arousal, and the role of reticular system in its maintenance is crucial in the physiological hypothesis. If we relate the physiological processes of arousal to the problem of consciousness and awareness we can go further and accord to the disorder of consciousness the etiologic role in the disorder of body scheme. This was actually done by Janet (26) whose conception of psychological tonus, and its impairment in states of depersonalization, is not too far removed from the concept of arousal. Federn (27) analysing the changes which occur during the state of falling asleep noted on the one hand an alteration in the perception of magnitude, and on the other hand states of depersonalization. Head (28) also attributed much importance to the role of consciousness in the alteration of the scheme of the body, and in particular the part which attention plays in this respect.

The following considerations will show that physiological hypotheses in themselves, are inadequate to explain changes which occur during isolation:

(a) there is no proof that the ascending reticular system requires, for its integrative function, a persistent variation in sensory in-put;

(b) physiological hypotheses fail as such to explain the choice of organs which the feelings are withdrawn – no physiology of arousal can explain the disappearance of the bodily experiences in the face, in the abdomen, etc., and the feeling of displacement in phantasy when only the hands and the eyes are covered;

(c) the identity of electroencephalographic patterns of arousal with states of awareness, and psychological arousal is questionable.

II. *Dynamic (Psychological) hypothesis*

This hypothesis concerns itself with psychodynamic changes within the individual emerging during isolation. As was stated before, we have purposefully focussed our attention on emerging psychological processes because of the impossibility of finding a common psychological constellation in all cases prior to isolation, and also because it is well known that changes in body image can occur in all psychopathological states.

The processes emerging during isolation were found to be related to the intensity and direction of aggressive tendencies. No case who manifested aggression overtly and experienced a significant intensity of anger developed changes in body scheme. It appeared that when aggressive tendencies were repressed, introverted and turned against the self, the feeling referrable to the absence of body feelings occurred. There was no consistent finding in regard to sexual tendencies. The problem is the relationship of this introverted aggression to the depersonalization states, and to the etiology of emergence of aggression. Schematically two theoretical formulations can be given: depersonalization as a defense or as the result of a split in the ego, and a disorganization of the self.

Depersonalization has been considered as a defense by many authors (13, 14, 15, 16, 17, 18) whose conceptions imply that the emergence of intense needs, be it libidinal or aggressive, causes unpleasantness, anxiety and fear, which results in withdrawal of feelings of interest from the involved organs.

Depersonalization as the result of a split in the ego due to turning in of aggressive tendencies has been upheld by some authors (29, 30). Freud, in a letter to Oberndorf, spoke of depersonalization as a 'split in ego' (31). Cameron's concept of the increase in tension as the cause of disorganization (32) can be interpreted as a disruption of the self due to undischarged inner tension.

be it aggressive, sexual or in general what he has called 'intensification syndromes' (32).

It is difficult to find much incompatibility among these concepts. The split in ego or disorganization of the self may be taken as a defense against the anxiety of annihilation or the confrontation with the inner action tendencies. The fact remains that in isolation the introversion of aggression was concomitant with the disorganization of body scheme. Why did aggression emerge to begin with? Tentatively one may assume that isolation was a frustrating experience, and aggression was a reaction to this frustration.

In psychoanalytic terms, isolation provoked a frustration of libidinal drives, a narcissistic injury which evoked aggression. This aggression was subsequently repressed, and introverted, causing a split in the ego. Or, one may say that isolation hindered the expansionistic tendencies of the organism (33), or its 'power motives' (34), resulting in an increase in tension which in part disorganized the self and in parts enhanced normalization processes and reorganization.

III. *Organo-Dynamic (relationship) Hypothesis*

By the term relationship we mean neither a purely physical, logical, nor physiological togetherness, but a concept connoting the way elements or beings emerge only in interconnection; or as Whitehead (35) has stated, form aspects from the standpoint of one another, constructing orderly or disorderly complexes or organisms. This aspect formation is not a physical or psychological phenomenon but it is a contribution to the essence of any being. 'A forming an aspect of B' or 'A having a relation to B', means that without A's existence B loses its own identity, and vice versa, no matter in what order of nature it stands (physical or biological). We call this an Organo-Dynamic conception because we assume that organisms come into aspects of one another always carrying an organic AND dynamic component. These two components depend on and emerge from one another but they are not identical or regressively interchangeable. They have different positional values in the system under inquiry.

This Organo-Dynamic conception is in accordance with the recent developments in our views about organism-and-environment complex. As Sullivan (34) and Angyal (35) have stressed, the boundaries of the individual and the world are closely intermingled, and it is extremely difficult to determine a line of demarcation. Total isolation is death. According to the relationship hypothesis the erection of boundaries in the TRADITIONAL way distorts the nature of the individual, and produces pseudo-facts or what Whitehead has called fallacies of misplaced concreteness. Cameron's concept of 'incomplete organism' (33) is an attempt to overcome the misplaced concreteness of traditional points of view. According to Cameron the very nature of the organism is plural and incomplete. Philosophy also has caught up with the growing awareness of the importance of the concept of relationship in psychobiology. Recent Phenomenological and Existential schools of philosophy have formulated as their unit of inference the 'Dasein' (37) or 'being-in-the-world'. It is only in the 'engagement' of the individual in the world that the individual himself can be comprehended. The link, the point of entry of the individual to his world, is the schema of his body, which depends, for maintenance of parts of its aspects in relation to the world, upon sensory supply. In the method of isolation described here, three major areas of engagement and relationship to the world, are being curbed in their activities, namely the visual, tactile and verbal spheres.

It can be assumed that we have deprived the organism from a persistent and on-going contact with the world and from experiencing. We have prevented the individual from 'closing' his plastic gestalts, or 'completing' his unity and identity. The organism is forced to remain opened, incomplete, out of relationship, un-engaged and disembodied. The evident consequences of this state would be changes in the organism's schema of embodiment and its personification.

The above contentions are in harmony with the assumptions held by Schilder (38), Lhermitte (39), Cameron (32), Scott (40), and others that the body scheme is a plastic ever changing (dynamic) process, perpetually being altered and reconstructed, whose integrity depends upon a continuous close perceptual (organic) contact with the external world.

We are well aware of the somewhat circular nature of the arguments, and the fact that the basic assumption of the hypothesis of relationship in any form may appear as descriptive propositions. One reason for this is the missing linking concepts which are needed to render comprehensible the 'coming into' aspects of organisms, the elaboration of which we reserve for other occasions; the other is the nature of the hypothesis itself which, being a unifying conception, becomes by necessity multidimensional and general. But we think the above statements form a preliminary step towards the elucidation of the problem of body scheme.

Summary

1. The disorganizing effects of sensory isolation on animals and normal human subjects led the authors to study this problem in mental patients for the purpose of gaining some information about the therapeutic value of the disorganization-reorganization sequence of the psychic events and about the problem of depersonalization and body scheme.
2. Two hebephrenics, 5 depressions, 2 obsessive neuroses, and 6 neurotic anxiety states were subjected to a partial sensory and expressive isolation for an average period of 4 days (eyes covered, arms maintained in a cardboard cylinder, and verbal communications only twice a day for interviewing.)
3. Two sets of changes occurred: (a) Disorganization: this consisted of the appearance of a depersonalization state in 8 cases; of visual, auditory, and gustatory hallucinoses, and of paresthesias. The two obsessional neuroses developed acute psychotic episodes, were treated with electric shock with subsequent improvement of both paranoid and obsessional states.

   (b) Reorganization: this consisted of a marked change in mood in almost all of the depressed cases, two of which showed lasting recovery and were discharged without any other therapy. In addition, constructive aggression occurred in most cases with an increasing tendency to association, surely and relationships-undertaking.
4. The common emergent dynamic process during isolation which was concomitant with the changes in body scheme was found to be related to the quantity and direction of aggressive tendencies. It appeared that repression and aggression turned against the self led to the depersonalization syndrome.
5. The theoretical aspect of the problem is discussed from three different points of view: organic, dynamic and organo-dynamic (relationship).

Résumé

1. Les effets disruptifs de l'isolement sensoriel sur les animaux et les humains incitèrent les auteurs à étudier ce problème chez les malades mentaux dans le but d'obtenir des renseignements sur la valeur

thérapeutique de la séquence désorganisation-organisation des évènement psychiques et sur les problèmes de la dépersonnalisation et du schéma corporel.

2. Deux hébéphrénies, cinq dépressions, deux névroses obsessives et six états d'anxiété furent soumis à un isolement partiel dans les sphères sensorielle et expressive pour une période moyenne de quatre jours (yeux couverts, extrémités supérieures maintenues dans un cylindre de carton rigide, et aucune communication verbale sauf pour une entrevue deux fois par jour).
3. Deux séries de changements survinrent:
   a) Désorganisation: qui consista dans l'apparition d'un état de dépersonnalisation dans huit cas, d'hallucinoses visuelles, auditives et gustatives, et de paresthésie. Les deux cas de névrose obsessive présentèrent des épisodes psychotiques aigus et furent traités par électrochoc avec amélioration subséquente des états paranoides et obsessionnels.
   b) Réorganisation: qui consista en un changement important de l'humeur chez presque tous les déprimés dont deux présentèrent une amélioration permanente et furent libérés sans autre forme de traitement. De plus, une agressivité constructive se manifesta dans la plupart des cas en des tendances accrues à la sociabilité et à l'établissement de relations interpersonnelles.
4. Le processus dynamique en cause durant l'isolement, concommittant aux changements dans le schéma corporel, semble être en rapport avec la quantité et la direction des tendances agressives. Il semble aussi que le refoulement et l'agression tournés contre le moi produisent la syndrome de dépersonnalisation.
5. L'aspect théorique du problème est discuté en regard de trois points de vue différents: organique, dynamique et organo-dynamique (relationnel).

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SOME CURRENT BIOCHEMICAL THEORIES OF PSYCHOSIS*

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In the last few years there has been an annually rapid development in the application of biochemical theory and biochemical experimentation to the problems of psychiatry. As a part of this development, certain hypotheses have been introduced suggesting that a disturbance in the metabolism of some important substance such as serotonin, nor-adrenaline or adrenaline results in a chemical imbalance in the brain, or leads to the formation of an abnormal product which is toxic to the brain, although not completely interfering with its metabolic activities. These views all seek some change in metabolism, whether the change originates in the brain or in the liver: some chemical change which triggers a psychosis. Their breadth of scope and their appeal as explanatory mechanisms for psychoses make it worthwhile to summarize these hypotheses and to offer some comments upon the problem.

At this particular period, such theories can bank to some extent upon the interest engendered by experience with the newer drugs such as largactil (chlorpromazine) and reserpine, and with the older phantastica (24), many of which are today being taken from the stage of galenical to that of crystalline alkaloid. Recently the phantastica have been renamed "hallucinogens"[2] (16), reflecting their current use in producing experimental psychoses[2]. Aside from the nomenclatural changes, however, it is not difficult to recognize a changed attitude today towards the traditional phantastica. Whereas earlier they were anthropological curiosities, now they are pharmaceutical specialties. They are being purified chemically, tested pharmacologically and evaluated clinically in the same way as new drugs are. Not only is information being sought about the physiological properties of these drugs and their sites of action in the central nervous system, but also about their effects on the chemistry of the organism and their biochemical *modus operandi*.

It is within this setting that theories have appeared assigning a primary role to a biochemical factor in psychoses. After all, it is asked, if an exogenous chemical such as mescaline or lysergic acid diethylamide can cause marked changes in psychic experience, even hallucinations, then is it not possible that fundamental to psychoses, there is an endogenous chemical change, a disturbance in normal metabolism of some substance which is important in brain function? Obviously such a question poses complex problems; but biochemistry has by this time developed facts, techniques and theoretical levels which enable it to cope with them. This is evidenced by the growing proportion of basic research, including biochemical work (8, 39a), which is being devoted to neuropsychiatry, and which is contributing to a greater understanding of the function of the brain.

Serotonin Theories

The metabolism of the important compounds, serotonin and the catecholamines, is the starting point for these current hypotheses. In this paper, the de-

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2The tendency to give more and more drugs this appellation, hallucinogenic, illustrates the fact that one component of the action of many drugs is some alteration in behaviour or subjective experience. Hence this trend need not be interpreted as meaning that the so-called hallucinogenic properties of many commonly used drugs have for long gone unrecognized, but merely as indicative of the present interest in the psychic actions of drugs. Changing the name of the drug does not clarify its pharmacological action on the central nervous system.

velopment and scope of the arguments implicating these substances will be indicated, beginning with the "serotonin" theories. As its name implies, serotonin is the "serum vasoconstrictor substance" which was known for over 50 years before it was described recently as 5-hydroxytryptamine (5HT) and identified with the independently discovered substance "enteramine" (10). Its role as a neurohumoural agent was first elaborated in relation to vascular tonus and kidney function. When it was found that it is present in the brain, in selected regions, and in fairly high concentrations in some of them[3], a more important role was sought for it than mere action on smooth muscle. Page (23, 37) and Amin *et al.* (2) suggested that 5HT subserves some special function in the nervous system. A certain resemblance between 5HT and LSD in chemical structure led the latter group to state that "the presence of 5HT in certain parts of the brain may be used to support the theory that the mental effects of LSD are due to interference with the normal action of this 5HT". In other words, 5HT has an important function in the brain, and LSD, because of a chemical similarity to 5HT, exerts an antagonistic action towards it, reflected clinically in the sequelae of LSD intoxication.

The view expressed in this statement has received some support from other laboratories. It is based upon the antimetabolite hypothesis, which says that a change in the structure of some essential metabolite such as a vitamin or a hormone or an amino acid, results in a new compound which may not only be incapable of functioning as the metabolite, but may also serve as a metabolic antagonist of this normal partner and, indeed, may even bring about the syndrome associated with deficiency of this metabolite (43).

This hypothesis, a major one in present-day biochemistry, is a corollary of that tremendous field of study which originated with Ehrlich's work, namely, the relation between chemical structure and biological action. It received its first statement by Quastel and Wooldridge (25) many years ago, in relation to the inhibition of succinic acid oxidation by malonic acid. Today, one can point to many examples of antimetabolites and antimetabolite action Some cases have been adduced in our laboratories (32, 33, 34), but it will aid our present purpose to choose the example of "Medmain" (44), an anti-serotonin made by Woolley and Shaw. This compound, (Fig. 1) differs from 5HT in several structural features. In certain biological tests it antagonizes the action of 5HT. For example, when 5HT is added to the bathing fluid in which the excised rat uterus is immersed, the organ begins to contract strongly and rhythmically. Medmain does not have this effect unless very high concentrations are used. When medmain and 5HT are in the bath together, no uterine contractions are seen. This type of phenomenon has been observed (3) also using oligodendrogliocytes in cultures of foetal human brain as test-object instead of uterine smooth muscle. These cells normally pulsate in such cultures. With low concentration of 5HT they contract very strongly. Medmain in ten-fold concentration antagonizes this contraction, but much stronger solutions of it have a 5HT-like action.

On the basis of their experience with 5HT, medmain and similar compounds, as well as related evidence by other workers, Woolley and Shaw have presented an intriguing hypothesis regarding the etiology of psychoses. Their argument (44) runs somewhat as follows:

[3]Highest concentrations (in dog brain) are found in the hypothalamus, area postrema, mid-brain, N. gracilis, N. cuneatus, and the colliculi (2). The identity of the brain serotonin was based on the pharmacodynamic specificity of action of 5-hydroxytryptamine.

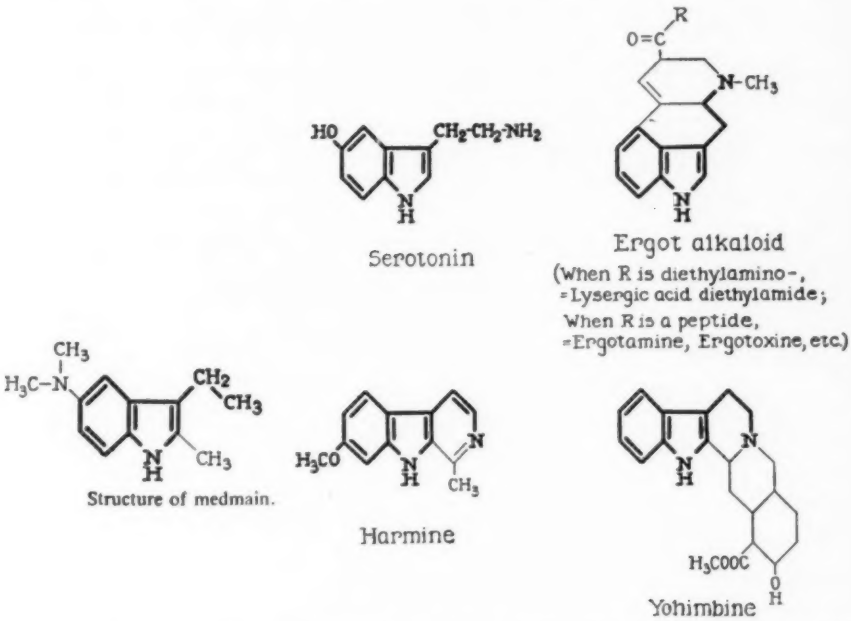

Fig. 1. Serotonin and some structurally related alkaloids. The heavy lines indicate the indole ring and side chain of serotonin. (From Woolley and Shaw, ref. 44).

1. These 5-HT analogues are antimetabolites of 5HT and are active in this way because the tissue receptors cannot "distinguish" between them and 5HT itself. Only 5HT can bind to and stimulate the receptors. The analogues can bind, and replace 5HT from the receptor or prevent it in turn from getting on, but in low concentrations they cannot stimulate.

2. Many alkaloids such as those belonging to the ergot, yohimbine and harmala families (Fig. 1), have been known for a long time to cause hallucinations on administration to man; they have two important properties: (a) they contain an indolic nucleus, within a relatively complex molecule; (b) they, or close chemical relatives, exhibit pharmacological antagonism towards 5HT in a number of biological tests.

3. These drugs act in the brain in an anti-serotonin way also, and in drug-induced hallucinations they reduce the effective concentration of 5HT. The same probably occurs in a "natural" psychosis. That is, the psychosis may arise "from a deficiency of serotonin in the brain, brought about not by drugs but by failure of the metabolic processes which normally synthesize or destroy this hormone there" (44).

This working hypothesis, although based on considerable experimental work, continues under test for agreement with new data. For example, we know the psychological effects of LSD, yet this compound does not behave consistently in the biological assays, including the oligodendroglial cell test, as a serotonin antagonist (3). In fact, as Woolley and Shaw themselves point out (44), some of the data are open to other interpretations e.g. that the drugs causing hallucinations inactivate the enzyme, amine oxidase, which destroys serotonin in the body;

and therefore that these drugs act by bringing about an excess of serotonin in the brain.

Another "brain bioassay", comprising two neurones and one synapse, has been studied by Marrazzi and Hart (20, 21). They stimulate one part of the optic cortex of cat and record from the symmetrically located, contralateral part. This is their transcallosal system. The response, as recorded electrically, is the result of the spread of a surface positive wave, corresponding to the inflow of impulses into the synapses, and a surface negative wave generated by the outflow. Adrenaline, amphetamine, mescaline, 5HT and LSD all have qualitatively the same action, namely, inhibition of the synapse (21). Because of this result, Marrazzi says that the action of LSD is really to increase the concentration of 5HT in the brain thus agreeing with the alternative possibility elaborated by Woolley, namely that a natural psychosis may actually result from too much serotonin in the brain.

The Woolley-Shaw paper also raises the question of what effects a large dose of 5HT might have on mentation. As a matter of fact, high concentrations of this substance circulate in the blood of patients bearing the argentaffinoma tumour (metastatic carcinoid, cf. ref. 18) but there are no unusual psychological effects or psychiatric symptoms associated with this condition. Intravenous injection of serotonin in man causes dizziness and peculiar sensations in the head (36). Woolley (3, 44) questions whether serotonin actually passes the blood-brain barrier. Feldberg and Sherwood (13) observed catatonia in a cat receiving serotonin directly into the lateral ventricle of the brain.

Other aspects to the role of serotonin have been emphasized. Serotonin, like other amines, occurs also in the methylated form i.e. with $-CH_3$ groups (instead of hydrogen atoms) attached to its amino-nitrogen atom. Methylated serotonins occur in toad venoms and in cohoba, a snuff used by the Cuban Indians in Columbus' time. It has been claimed (6) that they also occur in normal urines, but this matter awaits confirmation. Because of the occurrence of dimethyl-5HT (bufotenine) in cohoba there has been speculation as to the possible role of this compound in causing the mental symptoms associated with the taking of the powder. Bufotenine given to monkeys causes blindness and some disturbance in motor behaviour e.g. ataxia (12). In these monkeys "no reaction was observed to being picked up and petted, and no aggressive behaviour in response to abuse" (12). Bufotenine was considered to have LDS-like effects.

On other grounds also, methylation processes have been found pertinent to mental function. In the portal-systemic encephalopathy described by Sherlock and her colleagues (28), extra methyl groups in the form of supplements of the amino acid methionine cause an exacerbation of the mental symptoms.

To sum up, the concept that serotonin plays an important role in the functional activity of the brain and that some alteration in its concentration in that organ is associated with psychoses has attracted the attention of many researchers and has stimulated investigations of the role of 5HT.

Adrenaline Theories

The second group of theories which we wish to examine focus on some hypothetical alteration in the metabolism of the catecholamines: nor-adrenaline and adrenaline. The theory of the Saskatchewan workers, Osmond, Hoffer and Smythies, began with the observation that the structures of adrenaline and mescaline were very similar (22) (Fig. 2). The major difference is that adren-

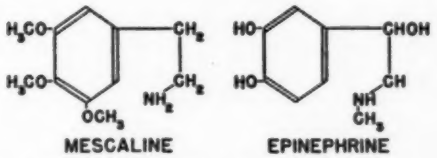

Fig. 2. Structures of mescaline and epinephrine.

aline has a methyl group on its nitrogen atom, i.e. on the side-chain of the molecule, whereas mescaline has 3 methoxy groups attached to the ring. Nor-adrenaline is generally accepted as the immediate precursor of adrenaline in the body, and the conversion of one to the other consists merely in adding a methyl group on to nor-adrenaline to form adrenaline. Suppose, it is asked, that some change occurs in the chemistry of the body and the methyl group, instead of attaching to nor-adrenaline in the normal position, is switched over to one of the ring positions? Then, a mescaline-like substance(s)—"M-substance" —would be formed. One of the research projects of the Saskatchewan Laboratory is the search for "M-substance" in the urine (14, 22). On this hypothesis a reduction in the body's supply of methyl groups would make less available for formation of the psychosis-producing agent (and, incidentally, of adrenaline) from nor-adrenaline. This reduction can be accomplished by feeding large amounts of nicotinic acid, which is excreted as the methylated derivative, thereby draining the tissues of extra methyl groups. When actually tested in the LSD experimental psychosis, nicotinic acid did not yield unequivocal results (1). It must be pointed out that biochemically not all methylation processes are similar. For example, the transmethylations of nicotinic acid and nor-adrenaline are well-known processes and the prototypes of numerous others (31). On the other hand, the methylation of nor-adrenaline on the phenolic groups (i.e. on the oxygen atoms, Fig. 2) rather than on the amino position (i.e. on the nitrogen atom) would be unique, although not beyond the range of possibilities. There is only one reaction known to occur in animal tissues which is analogous to this postulated step of methoxyl group formation (19).

Somewhat later, Hoffer and his colleagues introduced the adrenochrome idea and this compound became the candidate for the title of M-substance (16).

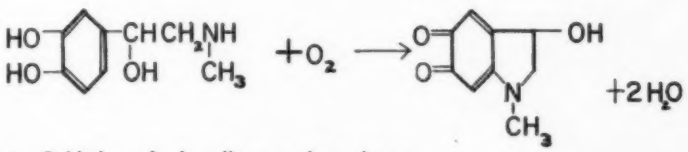

Fig. 3. Oxidation of adrenaline to adrenochrome.

Adrenochrome forms when adrenaline is oxidized by any of a variety of agents, e.g. it occurs in "pink adrenaline" (Fig. 3). The adrenaline undergoes a number of chemical changes, not all of which have been adequately described chemically[4]. One of the more stable products is adrenolutine, which derives immediately from adrenochrome and which possesses an indole nucleus. Both of these com-

[4]The sequence of reactions in which products named here are involved are as follows: Adrenaline → Adrenaline quinone → Adrenochrome (reduced form) → Adrenochrome (oxidized form, Fig. 3) → adrenolutine (indolic compound).

pounds have been postulated to be causative in schizophrenia by Osmond and Hoffer. Rinkel, Hyde and Solomon at the Boston Psychopathic used the substance, adrenochrome semicarbazone, which is quite different in chemical properties from the parent compound, adrenochrome. This material did not cause an experimental psychosis in volunteers (26). The Boston group have assumed that the results of Hoffer *et al.* (16) were really due not to adrenochrome but to another adrenaline oxidation product, described pharmacodynamically by Heirmans in 1937 (15). This product, named "adrenoxine", is of unknown structure. It is formed from adrenaline by enzymatic oxidation, but not by certain inorganic oxidizing agents (15). No evidence is available that "adrenoxine" can actually be formed in the type of "pink adrenaline" claimed by Hoffer *et al.* (16) to cause hallucinations.

Rinkel, Hyde and Solomon (26) have also sought an explanation for psychosis in a disturbance of the metabolism of adrenaline. They arrived at their views by a different route. Their experience with LSD administered to humans suggested to them that adrenaline metabolism was in some way interfered with, and they extrapolated from here to the naturally-occurring psychosis, in a search for some change in the function of the sympathetic nervous system. They have reported that LSD administration to normal volunteers causes dilatation of the pupils, rise in blood pressure, changes in the heart rate, increased rate of respiration, varied responses to adrenaline and nor-adrenaline, mild response to mecholyl, and manifestations of hostility with associated extrapunitive and intrapunitive anger (27). In other words, they observed a variety of changes in autonomic functions following LSD, not especially different from the amphotonic responses noted by others. They refer to the research of Witt (42) on the effects of LSD on construction of webs by spiders and find in some way that an "antagonism between LSD and adrenaline could . . . speculatively be interpreted into" . . . these experiments[5] (27). Rinkel *et al.* summarize their argument by suggesting that "LSD may interfere with the normal course of the adrenaline metabolism . . . that such interference may have brought about the formation of a noxious metabolite of the still not fully explored adrenaline cycle (*sic*). Such a noxious metabolite may possibly be the actual cause of the mental phenomena observed in the transitory psychotic-like LSD reaction . . . Adrenoxine may well be the adrenaline metabolite which may further advance our knowledge of the chemical relationship to the origination of psychosis" (27).

In drawing up an estimate of these theories, one is struck by the wide area of research which they cover and by the large amount of data which are being amassed and collated in reference to them. At present, and to quite varying degrees, these theories are speculative; but speculation is helpful when it leads to experiment, clings close to experimentally adduced facts and is continually corrected by such facts. The alienation of a hypothesis from the observations which originally give rise to it or the attempt to reconcile it with contradictory or even irrelevant facts may create unnecessary problems in experimentation and interpretation.

Certainly it would represent a tremendous advance in our understanding of brain functions if strong, clear-cut evidence were adduced for the operation of the type of mechanism proposed in the hypotheses discussed here. Such evidence is available at present neither for the clinical psychosis nor for the drug-induced condition.

[5]Witt found that LSD and mescaline have opposite effects on web-construction and conjectured that "the similar effect which the two drugs have on man is brought about by attacks from different points" (41).

A great amount of research is in progress on the biochemistry of the central nervous system and many of the lines are being followed quite independently of these hypotheses. One cannot but be impressed by the increasing volume of work which has been going on in recent years having as its aim the accumulation of new information on the distribution of the biosynthetic amines in the brain (2, 23, 29, 39, 45), their pharmacological and neurophysiological properties (9, 10, 17, 40), their pathway of synthesis in the body (4, 7, 33, 38) and their metabolism (5, 11, 30, 35). This type of research is necessary in order to provide the basis for bio-chemical appraisal of the effects of drugs on the central nervous system, of the role of serotonin and the catecholamines in cerebral activity, and indeed of organic factors in normal and abnormal mental function. Biochemistry has already made many contributions to neuropsychiatry and can be expected to register more as research progresses. Together with physiology, pharmocology and clinical science, it has an important role to play in the furtherance of psychiatric knowledge and in the ever-present aim of obtaining a growing measure of control over the activities of the brain.

Acknowledgments

The writer is indebted to Dr. R. A. Cleghorn and to Dr. Bruce Sloane for their helpful criticism of the manuscript. Research in the author's laboratory is supported by grants to Dr. R. A. Cleghorn from the Dominion-Provincial Mental Health Research Fund and from The Foundation's Fund for Psychiatric Research, Yale University.

Summary

Recently certain hypotheses with a biochemical flavour have been proposed to explain the etiology of psychosis. These hypotheses suggest that a disturbance in the metabolism of some important substance such as serotonin (5-hydroxytryptamine), nor-adrenaline or adrenaline results in a chemical imbalance in the brain, or leads to the formation of an abnormal product which is toxic to the brain, although not completely interfering with its metabolic activities; and, further, that this disturbance is causative in psychoses.

In this paper the various hypotheses are described and evaluated. For example, the metabolic disturbance has been attributed to (1) excessive accumulation of serotonin in the brain, (2) a deficiency of it in that organ, or (3) excessive conversion to bufotenine, its dimethyl derivative. "Adrenaline theories" postulate the conversion of (1) nor-adrenaline to a mescaline-like substance, or (2) adrenaline to adrenolutine, adrenochrome or "adrenoxine", the conversion product playing the role of the toxic, psychosis-producing agent.

The limited and contradictory evidence available to these hypotheses is pointed out, as well as the frankly speculative nature of some of the views. A brief indication is made of the considerable biochemical research on the function of serotonin and catecholamines in the brain, research which is going on in many laboratories quite apart from the described hypotheses. The importance of such research for neuropsychiatry is emphasized.

Résumé

Récemment, certaines hypothèses relevant de la biochimie ont été avancées en vue d'expliquer l'étiologie des psychoses. Ces hypothèses suggèrent qu'un défaut dans le métabolisme d'une substance importante, telle la sérotonine (5-hydroxytryptamine), la noradrénaline ou l'adrénaline auraient pour résult un déséquilibre chimique dans le cerveau, ou bien résulterait en la formation d'un métabolite anormal toxique pour le cerveau, sans toutefois en dérègler toutes

ses activités métaboliques. Ces dérangements au niveau du métabolisme cérébral seraient alors capables de produire des états de psychoses.

Dans cet article, diverses hypothèses de cet ordre sont décrites et jugées. Par exemple, on a attribué un dérèglement d'order métabolique à (1), l'accumulation éxagérée de la sérotonine dans le cerveau; (2) à une déficience en cette substance dans le cerveau; ou bien encor (3) à sa transformation exagérée en son dérivivé diméthylé, la bufoténine. Dans les théories impliquant le rôle de l'adrénaline, il a été postulé que (1), la nor-adrénaline est transformée en une substance ressemblant la mescaline; ou bien, d'autre part (2), que l'adrénaline est transformée en un produit jouant le rôle d'un agent toxique, lequel produirait des états de psychoses, eg. l'adrénolutine, l'adrénochrome ou l'"adréenoxine". Il est montré que les faits supportant ces théories sont limités en nombre et contradictoires, d'une part, et que de plus, certains des point de vue courants sont par trop spéculatifs. On a brièvement indiqué la nombre considérable de recherches biochimiques concernant le rôle de la sérotonine et des catécholamines dans le cerveau, recherches qui sont poursuivies dans plusieurs laboratories indépendemment des théories ici décrites. L'importance de telles recherches en neuropsychiatrie est particulièrment soulignée.

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"MENTAL FITNESS TO STAND TRIAL: A CASE REPORT"

By J. R. Howitt, M.D.[1] and C. S. Tennant, M.D.[2]

On June 9, 1953, at Fort Frances, Ontario, Niilo Karjalainen was tried on a charge of murdering Mrs. Elsie Tuusa. He was, at the same time, charged with murdering, in addition, a fellow worker by the name of Raninen but he was tried only for the murder of Mrs. Tuusa. The presiding Judge was the Honourable Mr. Justice Wells, Prosecuting Attorney, Mr. A. D. McLennan, and Counsel for the Defence was Mr. Moffatt Burr.

During the course of the trial a very unusual situation developed which was perhaps unique in the history of forensic psychiatry in Canada. The circumstances were as follows:

The accused was arrested on April , 1953, when he was charged with having murdered the two persons referred to above on the day previous in a small lumber camp about 22 miles north-west of Atikokan. He was transferred to the Gaol at Fort Frances and on April 15, 1953, he was examined by Dr. C. S. Tennant, who reported that the accused was not showing any signs of mental illness and as he was not mentally deficient Dr. Tennant considered him fit to stand trial. In his report to the Attorney-General's Department, Dr. Tennant stated: "as to his mental condition at the time of the alleged offence I would have to defer my opinion until such time as evidence is given by those who observed him or talked to him before and after the incident".

Dr. J. R. Howitt was later asked to examine the accused and he carried out an examination on May 7th. His examination extended over into May 8th. The doctor reported that during the examination the accused appeared to be quite clear in his mind and there was no evidence of any confusion, hallucinations or delusions and he gave as his opinion that the accused was fit to stand trial and to advise Defence Counsel.

Defence Counsel arranged for Dr. J. E. Burch, a Psychiatrist from Winnipeg to examine the accused some time during the month of May. Dr. Burch reported that he had carried out an examination of the accused extending over a period of several hours and that he had obtained access to hospital files at Winnipeg describing the condition of the accused when he was a patient there in 1952. He stated that the accused had suffered from Encephalitis following an appendectomy earlier in 1952 and that he was hospitalized for this condition for some 14-15 days. He stated that he could not find any neurological signs to suggest that the man had any sequelae from the attack of Encephalitis but he gave it as his opinion that he had strong paranoidal ideas due to a change in his personality following the illness. He expressed the opinion that the accused was quite fit to stand trial.

Following Dr. Tennant's examination of the accused on April 15th the man was treated for some 3-5 weeks by the Gaol Surgeon, Dr. W. B. Boyle, for headaches. During that period he was apparently given Nembutal 3-4 times each day. His medication was then changed to aspirin combined with some other drug. A few days after the change in medication the accused developed what appeared to have been a psychotic episode but this was of short duration. The accused was examined again by Dr. Howitt on June 8th on his arrival in Fort Frances for the trial and on June 10th, before any evidence had been given at the trial, he was re-examined by Dr. Tennant also. Both Crown Psychiatrists

1Medical Superintendent—Ontario Hospital, Port Arthur.
2Forensic Psychiatrist—Ontario Department of Health.

agreed that the accused had not changed mentally since they had examined him on the first occasion and that he was fit to stand trial.

The trial commenced on the morning of June 10th and the story unfolded. At the camp referred to—a camp S-100, five families lived in separate houses and the men were engaged in cutting pulp wood for the Ontario-Minnesota Pulp and Paper Company. The Karjalainens had lived there for about one year. All these families were Finnish. The Tuusas had come from Sweden to Canada with the Karjalainens in 1951. Mr. Korpi was born in Canada of Finnish parents and his wife was Canadian born. The Tuusas and the Karljalainens, on arriving in Halifax, had gone to Manitoba and, after staying a few days in Winnipeg the two men had gone to Pine Falls to work. It was while working there Karjalainen developed Appendicitis and was operated upon. It was following this operation, a few days after he was released from hospital, that he was readmitted to hospital suffering from an acute condition which was described as Encephalitis, but he was released after fourteen or fifteen days in hospital. Shortly after this, the Tuusas and Karjalainens moved to Camp S-110, near Atikokan. Mr. Tuusa, in his evidence, stated that he had known the Karjalainens intimately since they first met in Sweden three months before they came to Canada in 1951. The men worked in the same factory, although not side by side, but they lived in the same building. Mr. Tuusa stated that they had always been friendly and had never had any serious disagreements whatsoever, either in Sweden or in Canada. They went back and forth to each other's homes quite frequently.

When Dr. Tennant began his examination of the accused on April 15th he decided to make an effort to do so without the assistance of an interpreter and for about an hour he was reasonably successful although it was rather slow work. After about an hour the questions were of a type which would be difficult to explain in English to the accused and it was decided to return later with an interpreter. All that day and again on the morning of June 10th the doctor did not find it difficult to obtain answers from the accused although sometimes there was a little hesitation in answering. This was, however, probably due to the fact that he did not understand the question clearly. Dr. Howitt reported he found the same with the accused.

There was a history of the accused having undergone surgery in February 1953, for a double inguinal hernia and he had not yet returned to work on April 7th when the tragedy occurred. During the trial it was stated in evidence that early in the morning there were present Mr. and Mrs. Korpi, Mrs. Karjalainen, Mrs. Tuusa and Mrs. Raninen. There was some argument amongst the women but the subject of this argument was not divulged during the trial as the accused was not present at the time and this information could not, therefore, be given as evidence. Mr. Korpi stated that when those people left his home there was some bad feeling between Mrs. Raninen, Mrs. Tuusa and Mrs. Karjalainen. That evening Mrs. Tuusa and Mr. Raninen were killed. A few minutes after leaving the Korpi home Mr. and Mrs. Kangas, Mr. and Mrs. Raninen and Mr. and Mrs. Tuusa went into Atikoken in a station wagon and spent the day returning to camp somewhere about 7 p.m. in the evening. At that time the driver of the station wagon saw and talked to Karjalainen and he reported that he did not notice any change in him from the way he had always been. Korpi stated in evidence that some time between 5 and 6 p.m. after he had returned from his work in the bush he was talking to Karjalainen and the latter came into his house to have coffee. After having coffee he went to water and feed the horses and Karjalainen came along to assist him. After doing this

the two men returned to Korpi's house and had more coffee. Korpi said that he did not see any difference in Karjalainen at that time from what he had always been.

The wife of the accused stated that during the forenoon of April 7th her husband had been engaged in cutting up wood in the yard. In the afternoon he had been sitting on the back step looking dejected and holding his head in his hands on occasion. She had observed him sitting on the woodpile and had signaled him to come in. When he did not respond she went out and asked him to come in and he did. She said he was crying and went to lie down. Between 7 and 8 p.m. when the other three couples had returned from Atikokan she saw her husband in the back shed handling a high powered rifle similar to those used in the Finnish Army. She called him into the house again but he would not remain and left after a few minutes. She stated in evidence that she understood when he left that there was going to be serious trouble. Shortly after this, all the witnesses agreed, there were three shots fired. A few minutes after the three shots Mrs. Korpi was out on her front porch in the hope that she could find out what was going on when Karjalainen, with his rifle, approached her. They had a few words in conversation and Karjalainen entered the house carrying his rifle in a somewhat menacing position and looking around the room told the Korpis not to start anything. He later told them that he would not do them any harm because they had children. The Korpis were the only family who had children and they had two who were quite young. Karjalainen requested the Korpis to write out a "Testament" stating that he wished to leave everything to his wife. Mrs. Korpi wrote out such a statement and when she gave it to the accused to sign he wanted her to change the date on it from April 7th to April 2nd. She made this change and then he signed it and at the request of the accused Mr. and Mrs. Korpi signed as witnesses. He made some remark about life not being worth living and then he spoke of going up to the hill to end it all. He spoke of going to walk to Atikokan in order to give himself up to the police. But finally, after asking his wife to go home with him he left for his own house saying he was going to sleep and "wait for the enemy". When he asked his wife to go home with him she refused to do so and he then asked Mrs. Korpi to go with him but Mr. Korpi told him that his wife could not go because she had to look after their two young children. Karjalainen then went home alone.

Two of the men had gone to a neighbouring camp to summon the police and after a time the police arrived. With the assistance of Korpi they made a search, Korpi calling Karjalainen's name. After an hour or more Karjalainen emerged from the house and was promptly arrested.

Mrs. Tuusa had been hit by a bullet while she crouched behind the front door and her husband stood within a couple of feet of her. Mr. Raninen was also killed outright.

The evidence for the Crown was completed about noon on June 11. Dr. Burch had not, up to that time, been present in Court to hear the evidence. The evidence for the Defence was heard after the noon recess and later that afternoon the accused was called to the witness box. Dr. Tennant stated later in evidence that when the accused stood in the witness box to face the Court a marked change came over his face indicating that he was frightened. After the accused had answered only a couple of questions Defence Counsel was unable to obtain any answers to further questions and eventually Court was adjourned for one hour to enable the accused to lie down for a rest because the Presiding

Judge said that he thought the accused looked as though he were in need of rest. After a lengthy recess the Court adjourned because the accused was reported as being still unable to answer questions. Dr. Burch had examined him during the recess and reported that except for a rapid pulse—about 100, he was alright physically, but he would not answer questions readily and was apparently not prepared to co-operate. After some discussion between Defence Counsel and His Lordship it was decided that there would have to be a trial of the issue in the morning. Dr. Tennant examined the accused on Friday morning before the Court resumed and then in the trial of the issue Dr. Burch gave evidence in regard to the mental condition of the accused. He stated that in his opinion the man's experience in the Finnish Army, his misfortunes since coming to Canada and his worry, his illnesses and his operations had caused him to break down mentally and that he was suffering from Schizophrenia and that he was unable to stand trial. Doctors Howitt and Tennant gave evidence in regard to their examinations and stated that in their opinion the man was not showing evidence of mental illness and that he was fit to stand trial. The Judge adjourned for the noon recess, announcing that when Court resumed Counsel would address the jury and then he would charge them. After the noon recess Dr. Burch, with the understanding of Defence Counsel, set off by motor to return to Winnipeg. When Court resumed Counsel addressed the jury and then His Lordship charged them. They retired to consider their verdict and within approximately six minutes announced they had reached a verdict. When they reported back to Court they announced that they found the accused "sane, and fit to stand his trial". Defence Counsel soon realized that he was in somewhat of a predicament with Dr. Burch on his way back to Winnipeg. He decided to proceed with other witnesses and at the same time try to intercept Dr. Burch at Emerson, Manitoba, when he crossed the Border into Canada. The accused was put in the box but there was no success in questioning him. The Court adjourned late in the afternoon and the understanding was that if Dr. Burch arrived back at a reasonable hour in the evening the Judge would proceed to hear his evidence. It was, however, rather late when they finally contacted Dr. Burch at Emerson and he told Mr. Burr that he would return to the Court early the following morning.

On the following morning the wife of the accused was put in the witness box. It was noted by the Crown Psychiatrists that the appearance of the accused in the prisoner's dock had definitely changed from what it had been on previous days. He was now no longer perspiring although the day was hotter than any day previous during the trial. His breathing was different, his chest rising noticeably with every inspiration. He also mumbled something in Finnish. A few minutes later when his wife was asked a question in regard to what happened when she saw him with the rifle on the evening of April 7th he shouted something aloud in Finnish and repeated it. The Judge asked the interpreter what he had said. The interpreter stated that the accused had said "witness don't answer, witness don't answer". His wife was asked only a few more questions and after she left the box the accused was called but he did not reply to the first question he was asked. His Counsel then asked him a second question and he made some remark in his native tongue, which, although it was relevant to the question, did not make a complete sentence and the words were repeated three times. To another question he replied with words which were relevant but they were repeated three times and they did not constitute a sentence. To the next question he replied in Finnish "interpreter away, interpreter away, in-

terpreter away". The same type of answer resulted from more questions and the Judge announced a recess. At this time Dr. Tennant mentioned to Dr. Howitt that he was concerned about the apparent change in the condition of the accused and that he was convinced that the accused had definitely changed from his previous condition up to that morning. The two Crown Psychiatrists then discussed the case and it was agreed that in view of the altered circumstances they did not, at this time, feel they could say that the accused was fit to stand his trial and it was felt that a further examination would be necessary. The Crown Attorney, Mr. McLennan, was informed accordingly and he, in turn, informed the Judge who suggested that the Crown Psychiatrists should make a further examination. With an interpreter they went to the Gaol to which the prisoner had been taken. Dr. Tennant entered the examining room alone, Dr. Howitt remaining outside the room in the office. The accused did not seem much different from what he had been on other occasions except that he looked more or less exhausted and his eyes were staring. In answer to a question he stated he did not feel well. Asked in what way he felt ill he simply rubbed his abdomen with his right hand. When he was asked some other questions his answers were similar to those he had given from the witness box. Tears streamed down his cheeks. It was soon decided to discontinue the examination and Dr. Tennant left the room, Dr. Howitt taking his place. After two or three minutes Dr. Howitt summoned Dr. Tennant to the examining room and there was the accused, sitting on a chair talking in the repetitive manner already described. His right foot was held above the floor about six inches, the knee flexed and the left arm was fully extended above the head. It was remarked that this seemed to clinch the diagnosis but Dr. Howitt suggested that he continue his questioning of the accused and Dr. Tennant left the room. After some ten minutes he returned. There was the accused still sitting with his left arm extended above his head but Dr. Howitt explained that he had returned the prisoner's foot to the floor. Throughout the whole of Dr. Howitt's questioning the accused kept the left arm extended above his head. Dr. Howitt had decided because of the way the accused was talking that he would test him for Flexibilitas Cerea and while still talking to the accused but without explaining why he was doing it he had raised the accused's right foot from the floor, removed his hand and the leg remained in the position to which it had been raised. The same thing happened when Dr. Howitt extended the left arm above the head of the accused. As the two Psychiatrists were about to leave the examining room Dr. Tennant said to the accused "Well, come on, Niilo". Still mumbling something in Finnish he arose from his chair with his left arm still extended high over his head and walked from the room. Dr. Howitt reached out and returned the left arm of the accused to his side. The Psychiatrists reported to the Crown Attorney that they were convinced that the man was suffering from Catatonic Schizophrenia and that although it was possible for him to simulate the symptoms it was most improbable. This information being communicated to the Judge the court adjourned until the afternoon. Before Court was resumed Dr. Burch arrived from Winnipeg. Without Defence Counsel or Dr. Burch being informed of what had developed the Court resumed at 2 p.m. His Lordship explained to the jury what had developed and that it was necessary to re-try the issue of insanity. Dr. Tennant was called first to explain about the doubts which had arisen during the trial that morning and that these doubts in regard to the mental condition of the accused were confirmed later by examination. Dr. Howitt gave similar evidence. His Lordship addressed the jury, being

very kind in his remarks in regard to the two Crown Psychiatrists and their action in reporting at once to the Crown Attorney that a doubt had arisen in their minds as to the condition of the accused since the trial began. The jury, without leaving the box, gave a verdict of "of unsound mind and unfit to stand his trial". The Crown Psychiatrists were agreed that the strain on the accused which resulted from his arrest and later his incarceration had been considerably increased with the commencement of his trial and that it was further increased when he was called upon to enter the witness box. On the first day when he entered the box he had answered at least two questions adequately, on the second day he had not answered any questions. It was apparent that the trial was a great ordeal to him and in the interval between the adjournment on Friday evening and the opening of Court on Saturday morning the accused has definitely developed an acute psychotic condition, catatonic in nature and with Flexibilitas Cerea. It was considered most unusual that even though it was an episode of Catatonic Schizophrenia, Flexibilitas Cerea had been exhibited because it was realized that only in a relatively small percentage of cases of this type can this feature be demonstrated and then only at intervals.

The psychiatrists called by the Crown were impressed not only with the unusual and interesting situation which developed in this case but with the importance of observing certain rules when called upon to attend the Court at trials, whether one is called by the Crown or by the Defence. The essential points are as follows:

1. In giving evidence the psychiatrist has first of all to decide whether or not the accused is by reason of "insanity" fit or unfit to stand his trial. This question could probably be answered by the experienced psychiatrist following his examination of the accused in gaol.

2. If the trial of the main issue proceeds the psychiatrist will almost certainly be asked if the accused was or was not "insane" at the time of the alleged offense. It has always seemed important that the psychiatrist should not give evidence on this question until he has heard in Court all the evidence of those who observed or talked with the accused shortly before or shortly after the commission of the offence or both talked to him and observed him at one or both of these times. The psychiatrist for the Defence was not present in Court in this case during any of the time that witnesses for the Crown were giving their evidence.

3. It is important that psychiatrists be in attendance throughout the whole trial so that they may observe the accused, his reactions to the evidence given by witnesses and to observe the accused in the prisoner's dock or in the witness box if he is called to give evidence. In the absence of the psychiatrist some important matter may be observed by others. This may later be related to the psychiatrist in question but his ability to assess the importance of what has been observed by others will be much less than if he had observed it himself.

4. Although the psychiatrist must be prepared to state at the outset of the trial whether the accused is fit to stand rial he should be careful not to give an opinion as to his condition at the time of the alleged offense until after he has heard the evidence. If he has expressed such an opinion early in his report he may find it very difficult to give a contrary opinion later. Psychiatrists must realize that they should be entirely fair not only to the accused but to the Crown also, when they are called upon to assist the court in assuring that justice is done regardless of what happens to the accused.

Summary

The authors describe with some detail a murder trial at which they gave evidence for the Crown.

During the trial an unusual situation developed which resulted in something which is considered without precedent in Canada. There had been no suggestions, prior to the trial, that the accused was mentally ill or unfit to stand his trial, but after the Crown's case was completed the accused took the Box to give evidence on his own behalf. Because of his conduct there the Judge ordered a Trial of the Issue as to his fitness to proceed with his trial. He was found fit to continue but on the following day the Crown Psychiatrists, with the Defence Psychiatrist absent, reported that they observed a change in the patient and suspected that he was not well. A lengthy recess was announced to enable the Psychiatrist to examine the accused and when they reported on their findings to the Crown Attorney, the Judge ordered another Trial of the Issue and the two Crown Psychiatrists reported that the man was unfit to continue his trial and the Jury so found.

Résumé

Les auteurs décrivent assez longuement un procès pour meurtre auquel ils ont témoigné.

Au cours du procès, il se produisit un développement inattendu et sans précédent conu au Canada. Il n'y avait eu jusqu'alors aucune indication que l'accusé était mentalement incapable de subir son procès, mais après le plaidoyer de la Couronne, l'accusé comparut à la barre pour donner sa version.

En face de son comportement, le juge ordonna une enquête sur l'état mental. On le jugea en état de continuer, mais le lendemain, les psychiatres de la Couronne, en l'absence du psychiatre de la Défense, observèrent chez le patient un changement qui leur fit croire qu'il était malade. Un ajournement prolongé fut alors décidé pour permettre aux psychiatres d'examiner l'accusé et après rapport à l'avocat de la Couronne, le juge ordonna une nouvelle enquête sur sa capacité à subir un procès. Les deux psychiatres de la Couronne conclurent que l'accusé n'était pas en état de continuer son procès et le jury confirma cette opinion.

Plan To Attend The

Divisional Meeting of the American Psychiatric Association in Montreal, November 8, 9, 10, and 11, 1956.

This is only the second divisional meeting of the A.P.A. and the first to cover the North Eastern American and Canadian Branches. The first in San Francisco last year was a financial, social and clinical success. Enthusiasm is high and this meeting should duplicate the success of the first.

Plan now to attend and to bring your family. Reservations have been arranged with Sheraton-Mount Royal.

Watch your Journal for further details re speakers and programme.

CLINICAL OBSERVATIONS WITH FRENQUEL* IN CHRONIC SCHIZOPHRENIA

O. Lindan, M.D., Ph.D., C. H. Cahn, M.D., and H. E. Lehmann, M.D.**

Introduction

The remarkable therapeutic results with chlorpromazine and reserpine in the management of psychiatric disorders have stimulated considerable research to discover new and better tranquillizing drugs. Among the new preparations is the drug Frenquel which had been used clinically in a variety of mental conditions either alone [1] [2] [3] or in combination with other treatments (electroconvulsive therapy, chemotherapy etc.) [1] [3]. It has been reported that this drug was beneficial in some schizophrenic conditions [1] [2] [3]. It seemed to be more effective in acute schizophrenia than in chronic. Preliminary observations suggested also that Frenquel was of therapeutic value in alcoholic psychoses, senile and post-operative confusional states where delusions and hallucinations were the main symptoms [1] [3]. Patients with organic brain deterioration and chronic brain syndromes did not respond too well to the drug [3]. The therapeutic effects of Frenquel in general could not be predicted and the factors responsible for its success or failure in a particular case have not yet been elucidated.

We have therefore re-investigated the use of this drug at the Verdun Protestant Hospital, limiting ourselves to the use of Frenquel alone without the addition of other treatments and selecting only cases of chronic schizophrenia with marked hallucinations and delusions. Using this procedure we have been unable to observe any improvement resulting from this treatment, but we wish to report our results so that the indications for the use of the drug may be more precisely evaluated.

Method

All the patients selected for the investigation had chronic schizophrenia, and none were currently receiving any other medication (except occasional night sedation when necessary).

Table I shows the distribution of these patients:

Table I

Sex	*Number*	*Age*	*Duration of Illness*
Male	18	24-67, mean 42 years	5-33, mean 15 years
Female	12	43-67, mean 55 years	6-26, mean 15 years
Total	30	24-67, mean 55 years	5-33, mean 15 years

During the period under consideration the patients were interviewed by the authors 2 to 3 times a week, and were under constant observation by the nursing staff. They were also seen periodically by 6 other members of the medical staff. The patients were scattered over 11 of the 20 hospital wards.

Evaluation was made primarily of the patients' general behaviour and appearance, degree of contact with reality, verbalizations, and delusions and hallucinations. All patients were assessed for several weeks before medication was begun, and also for 2 weeks after cessation of medication.

*Frenquel is the trademark of the Wm. S. Merrell Co., Cincinnati, Ohio, for azacyclonol, or alpha-(4 piperidyl) diphenyl carbinol hydrochloride. The drug was generously supplied by this Company for the present study.

**From the Department of Psychiatry, McGill University, and the Verdun Protestant Hospital, Montreal (Dr. George E. Reed, Medical Superintendent).

Of the 18 male patients 9 were so deteriorated and 1 was so uncommunicative that the presence of hallucinations could not be corroborated by these patients' verbalizations, but was inferred from their appearance and behaviour. The remainder, i.e. 8 male and all 12 female patients, gave clear cut evidence of hallucinations, as follows: all 20 patients had auditory hallucinations, 2 also had visual, 2 olfactory, 2 gustatory, and 11 various somatic hallucinations.

The investigation was carried out in 2 stages:

(i) using a double blind control procedure,
(ii) administration of Frenquel openly.

For the first project 12 patients (8 female and 4 male) were selected who were in sufficiently good contact with reality to communicate their symptoms freely. A staff member who was not at all otherwise involved in this investigation decided by drawing lots which 6 patients were to receive Frenquel and which 6 patients were to receive placebo. The 3 medical authors as well as the ward nurses administering the tablets thus did not know what the patients were receiving. The patients were given 2-4 tablets three times a day, i.e. 120-240 mg. a day, for a period of 2 months.

A second group of 19 patients was then selected who were given Frenquel openly. These patients all received 2 tablets three times a day (i.e. 120 mg. daily) for periods varying between 1 and 2 months.

Results

The first part of the investigation revealed no appreciable changes in behaviour in the 12 patients on either Frenquel or placebo. It was impossible to estimate which patients were receiving Frenquel and which placebo. These findings were confirmed in the second group, as all 19 patients failed to show distinct changes. All the patients continued to be as hallucinated as prior to the treatment and the other symptoms also remained unchanged. Fluctuations in the behaviour of some of the patients were noticed, but these were not different from previously observed spontaneous changes. Thus we could not demonstrate any improvement in any of the symptoms manifested by these patients. It is noteworthy, however, that no patients became acutely disturbed during the period of medication (2 patients subsequently did have aggressive outbursts), neither were there any new symptoms, side effects, or toxic manifestations of any kind.

It should be noted that studies of this nature frequently demonstrate at least some beneficial effect due to the increased attention that patients receive during the course of such an investigation. This factor was probably minimized in the present study as most of our patients had previously been subjected to other psychopharmacological investigations and the nursing staff as well as patients were quite accustomed to such "projects".

Discussion

The negative results obtained by us, as compared with those reported by other workers, might be explained either on the basis of the selection of cases or because different criteria for the evaluation of improvement were applied. Although Fabing and Hawkins(1) treated 19 chronic schizophrenics with Frenquel alone and reported that 8 of them improved so much that they were capable of full adjustment, none of these patients were "so crippled by long term schizophrenia as those one meets on the back wards of state hospitals", while most of our patients would fall into this category.

The patients of Rinaldi et al(2) resembled ours more closely. Of 39 cases treated by these authors, 21 were reported to have shown definite improvement. In 9 of these "the improvement was marked". It may be that the criteria used by Rinaldi et al. for evaluating change were more sensitive than ours, so that some of the patients considered improved by them would have been regarded as not significantly changed according to our criteria. However, this does not account for the fact that they had 9 marked improvements and we had none. We cannot at this point offer any explanation for this discrepancy. It may be noted that we were using a larger dosage of the drug than Rinaldi and his co-workers.

Proctor and Odland(3) selected their patients on the basis of hallucinations and delusions but the majority of them had organic and toxic psychoses and only 2 were chronic schizophrenics. Both of these, however, were reported to have improved on Frenquel therapy.

According to the published work reviewed here, Frenquel would seem to have some therapeutic activity in certain acute psychotic states but its use in chronic schizophrenia requires further study.

Summary

Twenty-four hallucinated patients who had been hospitalized for schizophrenia for over 5 years were treated with Frenquel for 1 to 2 months; none of these showed any distinct improvement neither with regard to hallucinations nor any other symptoms.

Our results are compared and contrasted with those reported in 3 other publications on Frenquel.

Resume

Vingt-quatre patients souffrant d'hallucinations et hospitalisés depuis plus de cinq ans, avec un diagnostic de schizophrénie, ont été traités au Frenquel pour une période d'un ou deux mois. Aucun ne montre d'amélioration appréciable de l'état hallucinatoire ou de quelque autre symptôme que ce soit.

Nous avons comparé nos résultats avec trois autres publications qui rapportèrent des effets encourageants avec le Frenquel.

References

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2. Rinaldi, F., Rudy, L. H. and Himwich, H. E.: "The Use of Frenquel in the Treatment of Disturbed Patients with Psychosis of Long Duration". Am.J. Psych. 112: 343-347, 1955.
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NOTICE OF MEETINGS

Board of Directors — Cdn. Psych. Assoc.

A meeting of the *present* Board of Directors of the Canadian Psychiatric Association will be held Thursday evening June 14, 1956, at the Chateau Frontenac, Quebec City.

A meeting of the *incoming* Board of Directors for the year 1956-7 will be held Saturday morning, June 16th, 1956 at the Chateau Frontenac, Quebec City.

CLINICAL INVESTIGATION OF AZOCYCLONOL HYDROCHLORIDE*

An alleged antihallucinatory, anticonfusional agent

G. J. SARWER-FONER, M.D.[1] and E. K. KORYANYI, M.D.[2]

Encouraging effects in a few cases of acute schizophrenic psychoses with hallucinations, confusion, and delusions were reported with this agent (6). Because of this, the same author tested azocyclonol hydrochloride† on the alleged "model psychoses" produced by LSD-25 and mescaline. (11, 5, 6). Several investigators felt that it might be of value in the schizophrenic psychoses as an antihallucinatory, anticonfusional agent (11, 12). The literature on this, and the theoretical validity of these assumptions, will be discussed later.

The following claims are made for this drug. That this agent is a "specific" in eliminating the confused state, and blocking hallucinations in the acute schizophrenias. It is also claimed that it does not have either a sedative or a stimulating effect in humans, and that it is free from side effects (9, 10). The effects of azocyclonol hydrochloride were investigated in the open psychiatric wards of Queen Mary Veterans Hospital for a five month period.

Research Design: The basic research design and routine was based on that already described for reserpine (13, 14). Patients with disorders of affect and/or hallucinations were studied. This consisted of observing the physiological effects of the drug, and the influence of these physiological effects on the emotion (affect) displayed by the patient.

In this study, only patients with grossly observable disorders of affect, and/or hallucinations and delusions, were chosen. A description of the patient prior to taking the drug was made. A complete physical examination was done, and white blood count, red blood count, platelet count, urinalysis, cephlalin flocculation, serum bilirubin, blood sugar, and prothrombin time were done. The physician wrote a description of the patient prior to the administration of the drug. Daily notes were made independently by the physician and nurse on special sheets, and pulse, temperature, blood pressure and respiration, as well as weight, were taken daily. Weekly blood, liver function, and urine examinations were then done, as mentioned above, as screening tests for toxicity.

Psychotherapy: An intensive study of the psychodynamic, and interpersonal relations of all patients were made. Psychological tests and finger paintings were done in a high proportion of the patients. Extensive knowledge of the psychodynamic, as well as the physical and physiological factors involved, enabled us to use the "natural course of the illness" as the basic criterion for estimating therapeutic results. We felt that we were able to distinguish between what was due to hospital milieu and psychotherapeutic treatment. The only variable introduced was the drug. Psychotherapy continued as usual since it would have been artificial to pretend to stop it. Even if formally "stopped" a great deal of feeling would still have existed around the taking of a drug, and around the therapeutic hospital milieu and occupation therapeutic program, and this would have introduced a second variable. No other drugs or organic auxiliary treatments such as electric shock, etc., were given while the patient was on this study.

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*From the Department of Psychiatry, Queen Mary Veterans Hospital, and the Department of Psychiatry, McGill University Faculty of Medicine, Montreal. Presented at a Meeting of the Psychiatric Section, Montreal Medico-Chirurgical Society, Feb. 23, 1956.

1Consultant in Psychiatry, Queen Mary Veterans Hospital.
2Senior Intern in Psychiatry, Queen Mary Veterans Hospital.

†"Frenquel" (Merrell Co.) supplied through the courtesy of Dr. R. C. Pogge.

NOTE: We wish to thank Doctors Hariton, O'Brien, Cummings, R. Smith and Hanrahan for contributing observations to this study, and the nursing staff of Queen Mary Veterans Hospital without whose assistance this work would not have been possible.

Data: A total of 19 patients were studied over a 5 month period.

Dose: Average dose 120 mgm. per day per os. (Range 40-160 mgm.).

Average duration of treatment: 8 days. (Range 1-44 days). Patients who were on the drug only 1-5 days fell in the group who either panicked or became strikingly worse on the drug (8 patients). Five patients were on the drug for over 20 days.

Table 1 shows the diagnostic categories. Ages varied from 19 to 60 with all the patients, except 1, between 19 and 50.

Table 1

DIAGNOSES

Acute schizophrenic reactions	—13.	Schizophrenia, paranoid type	—12. Six of these were just developing or of under 6 months' duration. The others were acute exacerbations of an older process with previous ups and downs in its course. Chronic undifferentiated schizophrenia —1. This, to, was an acute exacerbation of a chronic process, but not of the paranoid type.
Passive-dependent schizoid personality with somatisation	—1.		
Depressive reaction with parnoid trends	—2.		
Depressive reaction in an obsessive-compulsive personality	—1.		
Depressive reaction in an arrested case of G.P.I.	—1.		
Obsessive-compulsive neurosis	—1.		

Results

Space does not permit detailed listing of the 19 patients. An example of the data follows:

Case 16, Mr. B. A., Age 22.

Diagnosis: Schizophrenia, paranoid type.

Conditions and affects before drug: Army private. Hears voices. Visual hallucinations of man with rifle coming to kill him. Felt people were threatening him. Ideas of reference, delusions, projective and dissociated thinking, poor judgment, disoriented as to time and place.

Dose and duration: 160 mgm. day x 21 days.

Changes in physiology: None.

Condition and effect while on drug: Remained hallucinated and delusional. Refused pills after 21 days.

Disposal: Committed to a close setting.

Six patients showed no observable change. It is this group that was on the drug for a fairly extended time, since there had been no indication to stop it. Of these 6, 2 had hallucinations, 1 of these also had delusions, and 1 had marked anxiety, 2 had depressions and 1 was paranoid. One went A.W.L. after 6 days, and this must be considered as the equivalent to panic. Two patients had to be committed to a closed setting, because they were too disturbed for an open one. (See Table 2). It is to be emphasized that all patients on this study were very disturbed and ill with marked disorders of affect, and/or hallucinations or delusions.

Table 2

CONDITION OF PATIENTS WHILE ON FRENQUEL

*Better	*Unchanged*††	*Worse*
Case 11	Case 1	Case 2—panicked.†
Case 14	Case 7	Case 3—depression deepened. Suicidal.
	Case 8—went AWL 6th day.	Case 4—panicked.†
	Case 15—committed.	Case 5—panicked.†
	Case 16—committed.	Case 6—anxiety increased.
	Case 19	Case 9—delusions and anxiety increased.
		Case 10—Panicked†, ideas of reference appeared. Committed.
		Case 12—Delusions and anxiety increased.
		Case 13—delusions increased. Committed.
		Case 17—anxiety increased. Hallucinations and delusions same. Committed.
		Case 18—became suicidal. E.C.T. Committed.

*This improvement was not attributable to the action of the drug; but was part of a slow steady improvement which went on independently under psychotherpy.

†The group that panicked did so in the first few days on the drug. This cannot be attributed to the drug, but rather to the meaning to a very sick patient of the physician's action in giving him the drug, i.e., a transference phenomenon.

††Unchanged included those very ill delusional, hallucinated, confused and depressed patients who showed no change in the course of their illnesses.

Two patients improved slowly while on the drug and psychotherapy. This was not attributed to the drug. The first (case 11) was a patient with a chronic schizophrenic process of many years' duration with periodic exacerbations, who had been hospitalized in our hands on 3 separate occasions. On each of them he slowly remitted with a course of subcoma insulin and psychotherapy over a 3 month period. On Frenquel he showed the usual 3 months' improvement, and gained 4 pounds. The second patient (case 14) improved on psychotherapy over a 3 month period, and was on the drug for a 42 day period. He lost 2 pounds. This was what we could have expected in our hands with psychotherapy alone in this case, and it cannot therefore be attributed to the drug.

Eleven patients became markedly worse (see Table 2). Four of them panicked while on the drug (see Table 4). This phenomenon cannot be attributed to the action of the drug, but was rather a transference phenomenon. Table 4 presents the data on patients who panicked and/or refused the drug. The patient that went A.W.L. after 6 days must be considered as the equivalent of a panic.

Table 4

PANICKED OR REFUSED DRUG

Case 2—panicked after 3 days.
Case 4—panicked after 2 days.
Case 5—panicked after 1 day.
Case 10—panicked after 3 days.
Case 1—refused drug after 6 days.
Case 8—went AWL after 6 days.
Case 15—refused drug after 44 days, "made me worse."
Case 16—refused drug after 21 days, "didn't help."

Toxicity: One patient developed an itchy palmar rash after 2 days. Another complained of a rash, but this was a delusion.

Hallucinations, delusions, ideas of reference, confusion, and depression: Fourteen patients with these symptoms were studied. (see Tables 3, 4, and 5). Six had frank hallucinations. They stopped in only 1 case (case 14) already referred to, in 42 days. This phenomenon was not attributed to the drug, as already mentioned. Another hallucinated less (case 11) after 3

months' treatment, but as already described had always had the same remission on 3 months' psychotherapy, hospitalization, occupational therapy, and sub-coma insulin. This, therefore, could not be attributed to the drug. All the others remained unchanged as to their hallucinations.

Table 3

EFFECTS ON HALLUCINATIONS, DELUSIONS, CONFUSION, AND IDEAS OF REFERENCE

Case 2—delusions before—panicked after 2 days. Left hospital against advice.
Case 4—ideas of reference. Felt depersonalized before. Panicked.
Case 6—auditory hallucinations before. Hallucinations unchanged. Anxiety increased.
Case 10—suspicious before—marked ideas of reference appeared while on drug.
Case 11—Hallucinations, delusions, confusion before. This slowly lifted over a 3 month period as it had on previous hospitalizations. On drug 31 days.
Case 12—hallucinations and delusions before. Unchanged.
Case 13—Delusions and ideas of reference before. Worse on drug.
Case 14—auditory hallucinations before. Slow improvement over a 3 month period not attributable to drug. On drug 42 days.
Case 15—delusions before. Unchanged.
Case 16—visual and auditory hallucinations before. Unchanged.
Case 17—auditory hallucinations, delusions and ideas of reference before. Anxiety worse. Rest unchanged.

Four patients had ideas of reference. One patient with no ideas of reference before, developed very prominent ideas of reference. This worsening was probably not attributable to the drug since in terms of psychodynamic study this patient distorted the physician's motives for giving him the drug, and it is therefore a transference phenomenon. At any rate, the drug produced no improvement.

Six patients had delusions. One of these had previously received chlorpromazine and the delusions had disappeared. Chlorpromazine was stopped, and they returned; Frenquel was administered, and they became worse. They again disappeared when chlorpromazine was substituted. It was felt that this, too, was a transference phenomenon, since chlorpromazine produced marked physiological effects which the patient was aware of, while Frenquel produced no such physiological effects. He therefore felt that Frenquel "did nothing" and was angry with his physician for leaving him without the "powerful magic" which he had been able to feel working in him, and putting in its place an "inert substance".

Of 5 depressive reactions, 1 did not change, and 3 were worse.

Thus there is no evidence for this drug's alleged "antihallucinatory, anti-confusional, antidelusional activity" in this study.

Table 5

EFFECTS ON DEPRESSION

Case 3—depression worse after 2 days, was suicidal.
Case 5—panicked after 1 day.
Case 7—no change.
Case 9—anxiety increased.
Case 18—undifferentiated schizophrenia, chronic. Became markedly despondent, suicidal and suspicious.

Discussion

From the data presented, it is thus evident that in this series the drug was without any beneficial effects. Yet other authors have reported some beneficial results. This discrepancy may be partly explained by the differences in approach to the problem of drug research in psychiatry.

We feel that it is essential to structure a drug research project in psychiatry so as to attempt to evaluate all the variables known to play a role in psychiatric improvement. This must include the role of psychological factors for they are the ones that are often being ignored in current drug research in psychiatry. These considerations are the subject of another paper (16). The role of some of these factors has been illustrated by our previous publications (13, 14, 15), and again, in this study, attempts were made to evaluate these considerations.

The literature on Frenquel will now be considered.

Fabing and Hawkins reported on 115 cases studied over a year's period (6). These cases were of the most varied diagnoses. E.C.T. and other organic methods were used in association in a high proportion of the cases, so that the expressed role of Frenquel was not clear.

Fabing's group included only 14 cases of Acute Schizophrenia, all of whom were ill less than 5 months. This group therefore approaches in number and type most of the patients reported on in this study. Only 5 of the 14 patients remitted on Frenquel alone, while 3 others showed slower (nonspecified as to time) remissions, but "short courses of electroshock therapy completed their recovery". Of 9 unsuccessful cases, 3 had E.C.T., and one chlorpromazine, but to no avail.

Fabing concludes that Frenquel "is not consistantly successful in relieving such disorders." He adds that it appears to have a definite but limited place among drugs which bring freedom from confusion (ataractic drugs). He felt the drug worthy of further study. In our opinion, evaluation of the total constellation, including the psychological factors, is of the greatest importance in determining the relative usefulness of the drug.

Fabing also studied the blocking action of Frenquel in the allegedly "Model Psychoses", produced by LSD-25 and mescaline (4, 5, 6). The following points are worthy of consideration. The term "model psychosis" was coined by Roland Fischer because he felt that the symptoms produced by these agents resembled those of schizophrenia and the functional psychoses (7). This would lead the casual reader to feel that these toxic psychoses are indeed "Models" of schizophrenia. Quite the contrary is true. Ebaugh has cautioned against equating the two conditions (3). These drugs are known in the older and European literature as "deliriants". The ingestion of these drugs produces toxic signs such as anorexia, nausea, vomiting, chilliness, restlessness, dilated pupils, and slight variations in blood pressure and pulse. Furthermore, the main mental effects constantly seen are in the realm of apperception, i.e., are distortions to both internal and external sensation. Changes in mood and anxiety are less constant. It can be speculated that these are secondary to the effects produced on the pre-existing personality by the disorder in apperception. A variable, but usually good, degree of insight is retained by the experimental subject who knows that he is suffering from a toxic phenomenon. This therefore can clinically be more easily equated to other known toxic psychoses than to schizophrenia. By no stretch of the imagination can these experimental toxic psychoses, therefore, be termed to approximate schizophrenia, and the term "model psychoses" is extremely misleading.

It should be added that chlorpromazine (17), as well as nicotinic acid (1, 8), also have a blocking effect on many of the manifestations of the mescaline and LSD-25 psychoses.

The portion of Fabing's work dealing with this does not seem to us to be pertinent to the question of a specific antihallucinatory effect in schizophrenia. Nor does the use of this phenomenon seem pertinent in the promotion of this

drug as an antihallucinatory agent. Though interesting, a blocking action on an experimental toxic psychosis is not necessarily an open door to the treatment to schizophrenia.

Proctor and Odland found the following: (11) Three groups of patients were used. Seventeen chronic psychotic patients of the most varied diagnoses formed the first. Five of these showed improvement, of which 3 were marked, and 2 were mild. Two mental defectives fell into the markedly improved group.

Thirty-four patients, mostly with acute psychoses, formed another group. Twenty of these showed marked improvement, and it is stated that all of them lost their hallucinations and delusions except one. Six showed moderate improvement and 8 showed no improvement.

Group 3 consisted of 20 patients with acute toxic hallucinosis. Nineteen of these were alcoholic, and one was a bromine intoxication. "The results in this group have been amazing. In all but 3 patients suffering from delirium tremens, there was complete alleviation of symptoms within a matter of hours."

In the first two groups, no time relations are given for the duration of treatment. Thus we do not know how long it took to obtain a remission.

The one categorically clear result seems to have been in the toxic hallucinosis using intravenous preparations. Here is a most interesting observation which merits very careful follow-up and further study.

Rinaldi and his collaborators report that Frenquel corrects certain E.E.G. changes in the experimental animal which appear with LSD-25. We can only reiterate what we have already stated about the differences between schizophrenia, in which no constant pathognomonic and confirmed E.E.G. changes are found, (although Davis (2) reports low-voltage, fast activity "choppy rhythm" accompanied by poorly organized alpha-rhythm in schizophrenic patients) and the "model psychoses."

Rinaldi reports on the use of Frenquel on 39 chronically hospitalized disturbed patients (12). Twenty-one of 39 patients improved, 7 others were doubtful, 7 were unchanged, 4 became worse. The factor of the added attention as an improving agent, so eloquently demonstrated in many hospitals with chronic patients, and by the work of Wittkower and Latendresse (18) in the Verdun Protestant Hospital, Montreal, does not seem to have been evaluated. Why patients continued to improve while on Placebo is not too clear (was this attention, care, interest in the patient, added stimulation through O.T. and psychiatric interviews, perhaps better food, certainly more interest at a personal level, a patient's moral obligation to thank the doctor for all this, or the drug?) Rinaldi does not state specifically what happened with the improved group on Placebo, adding only that 14 of the improved group benefited at the end of the second week. The others improved more slowly.

It would therefore seem that the results are not consistently clear-cut or favourable, although there are some very interesting and promising observations on toxic hallucinosis.

It should be emphasized that Fabing made no dramatic claims for the drug in his work, but merely suggested that it had had interesting but inconsistent results in several cases and therefore merited further study. Nor do the other authors cited make the rather extravagant claims made in some quarters.

The small series, the inconsistent results, and the apparent lack of control of possibly pertinent factors involved in the processes of remitting from a schizophrenic episode, seems to us to make the use of the term "specific for

relieving hallucinations, etc.", unjustified. None of the authors quoted above used it in this way.

In this study no evidence for therapeutic usefulness, or antihallucinatory, anticonfusional, antidelusional action was found, using the oral preparation.

Summary

The effects of azocyclonol hydrochloride were tested on 19 carefully selected patients. Results were completely negative, no evidence being found for this drug's alleged antihallucinatory, anticonfusional, antidelusional role.

The literature on this drug was reviewed, and possible reasons for the discrepancies as to results were suggested.

The allegedly "Model Psychoses" are not the same as schizophrenia, but are rather toxic psychoses. Blocking effects on them, though interesting, are not necessarily an open door to the treatment of schizophrenia.

The importance of attempting to control all the known factors involved in the curative process in psychiatry, in doing drug research, is stressed. This must include the role of psychological factors which is too often ignored.

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Meetings of Interest

An *Institute on Psychiatry* was held under the auspices of the University of Manitoba on March 19-20, 1956.

Guest speakers included Dr. Jules Maeserman, Chicago, Drs. Abraham Hoffer and Keith Yonge of Saskatoon.

A Study Course in Advanced Psychiatry was held recently in the Department of Psychiatry, University of Toronto, commencing 27th January and finishing 23rd March, 1956. It consisted of a series of fortnightly lecture demonstrations and panel-discussions woven around the central theme of the Biology of Schizophrenia. The success of the Study Course can be gauged from the fact that it attracted over one hundred psychiatric registrants. Encouraged by this, the Department plans to launch and sponsor further such courses and it is probable that the next of these will have Group Psychotherapy as its theme.

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INFORMATION FOR CONTRIBUTORS

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